Previous

SSPORTS ENVIRONMENTAL DETACHMENT

POST OFFICE BOX 2135, VALLEJO, CA 94592-0135

POLYCHLORINATED BIPHENYL (PCB)
ABATEMENT REPORT

FOR

PCB ABATEMENT OF BUILDINGS 122 AND 306
TRANSFORMER LOCATIONS

HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

PREPARED FOR

~~ENGINEERING FIELD ACTIVITY-WEST~~
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

JULY 30, 1999

PREPARED BY:
PCB ASSESSMENT AND SAMPLING
SSPORTS ENVIRONMENTAL DETACHMENT

APPROVED BY:

8/30/99

Henry Scherer — DATE
PROJECT REPRESENTATIVE
PCB ASSESSMENT AND SAMPLING
SSPORTS ENVIRONMENTAL DETACHMENT

TABLE OF CONTENTS

1.0 FACILITY IDENTIFICATION

Facility Location: Hunters Point Shipyard
San Francisco, California

2.0 PURPOSE

The Ship Superintendent Portsmouth (SSPORTS) was tasked by Engineering Field Activity-West (EFA-West) to perform the following work:

a. Building 306: Replace transformer I-1 casing drain valve and external drain plugs, clean transformer I-1 external surfaces, remove floor aggregate rock showing signs of oil, and resurface areas from which rock was removed with a new concrete surface.

b. **Building 122**: Remove and dispose of PCB contaminated oil from transformer V-2 casing, clean the external surfaces of transformer V-2, and clean the external surface of the concrete pad upon which transformer V-2 is installed.

The work was performed at these two sites in accordance with the instructions of the EFA-West Engineer-In-Charge for this project.

3.0 WORK SUMMARY

1. The PCB abatement and transformer repair work was performed in accordance with the instructions of the TWD listed in reference 1 with the following results:

   a. **Building 306**: The transformer was de-energized, drained, refilled and re-energized without incident. The lower casing drain valve and connecting piping was replaced, and no leakage was evident after the casing was refilled with oil. The upper and lower casing drain plugs were replaced, and no leakage was evident after the casing was refilled with oil. The entire exterior surface of the transformer was cleaned by wiping with kerosene moistened cloths. Upon refill of the casing with oil, several small weeping leaks were noticed at threaded connection joints between the upper and lower transformer-to-casing heat exchanger connecting joints. There are three sets of finned heat exchangers which provide cooling to the transformer. Each uses convection flow of oil through the fins and tubing, and convection flow of ambient air through the exterior surfaces of the heat exchanger tubing, to provide cooling to the transformer. Each heat exchanger is connected to the transformer casing at a low and a high location. The connections are threaded joints through an intermediate spacer block to provide separation of the heat exchanger from the transformer casing. These leaks could not be corrected. The reasons for this are as follows:

      1. The transformer had been installed completely assembled. This is typical of such a transformer installation. The transformer was completely assembled at the factory and shipped to its location, installed, and then filled with oil. The transformer had been installed on a rock base which, over time, has undoubtedly shifted. This shifting has introduced a complex strain to the transformer, causing deformation over time. Disconnection of the upper and/or lower heat exchanger to casing joints would have allowed the casing to move slightly to accommodate the strain. This movement would result in a change in the relative positions of the upper and lower connection points on the transformer casing relative to the dimensions of the connection points on the heat exchanger.

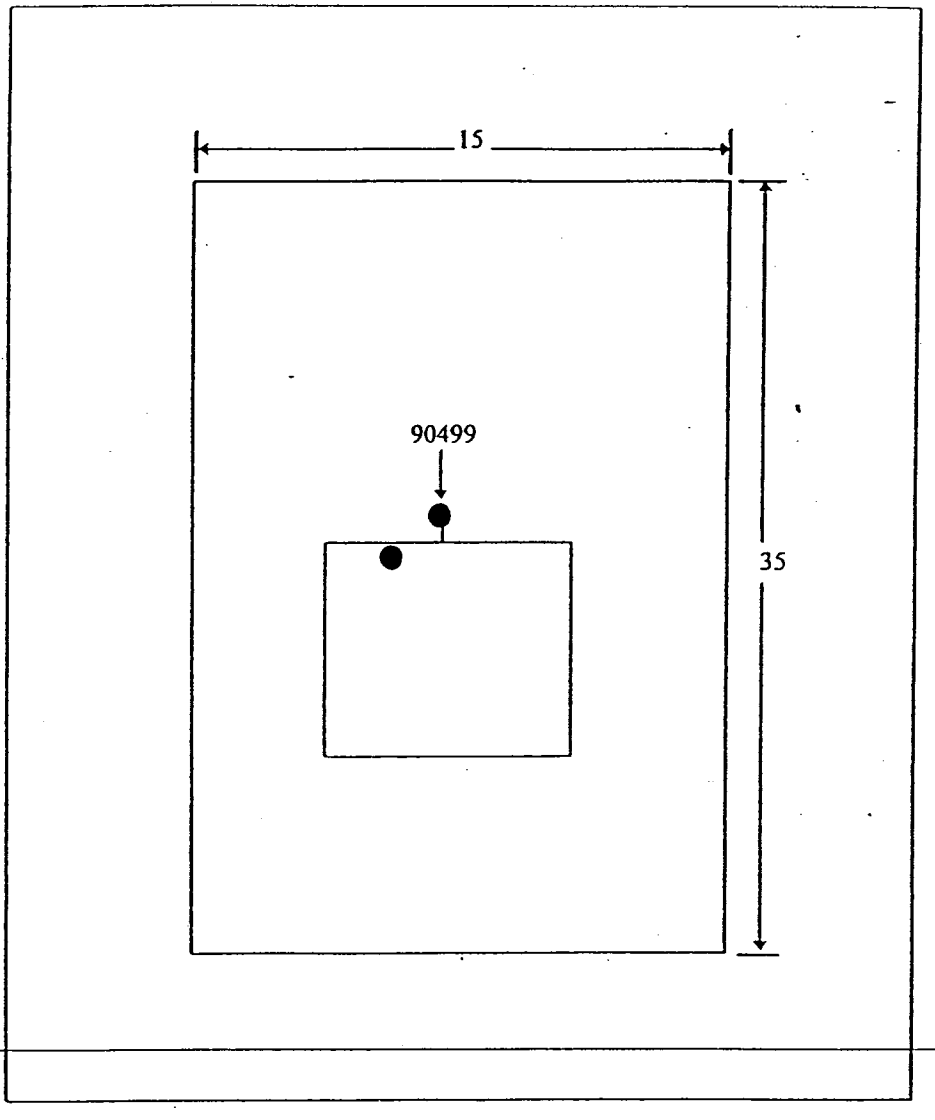
The resulting joint misalignment would be very difficult to correct. The upper and lower connection points are threaded joints. Threaded joints require very precise alignment in order for the threads to mate. It is considered highly probable that disconnection of a heat exchanger would result in the inability to reconnect it.

2. The heat exchangers are large and heavy welded assemblies. The room in which the transformer is installed was not designed to support heavy maintenance of the transformer. It contained no installed attachment points designed to allow the installation of lifting equipment necessary to move and manipulate transformer equipment and components. The room in which the transformer is installed is small and does not permit the installation of a lifting tripod of other assembly of sufficient size to allow both the lifting and movement of a single transformer heat exchanger, and the installation of the lifting equipment itself.

3. The extent of repairs to the heat exchangers necessary to correct the leaks could easily exceed the capability of portable equipment. Removal of a heat exchanger would require correction of any problem prior to reinstallation. The extent of repairs necessary cannot be known until after the heat exchanger was removed and examined. Given the size of the heat exchangers, and the difficulty of moving them, it is possible for the damage to be of a nature where specialized welding and machining equipment would be required to effect repairs. It must also be considered that the complexity of the movements necessary to accomplish the lifting of a heat exchanger out of the small confines of the room, through the substation, positioning and laydown, repairs, followed by return and re-assembly have of themselves a very high probability of damaging the heat exchanger beyond repair.

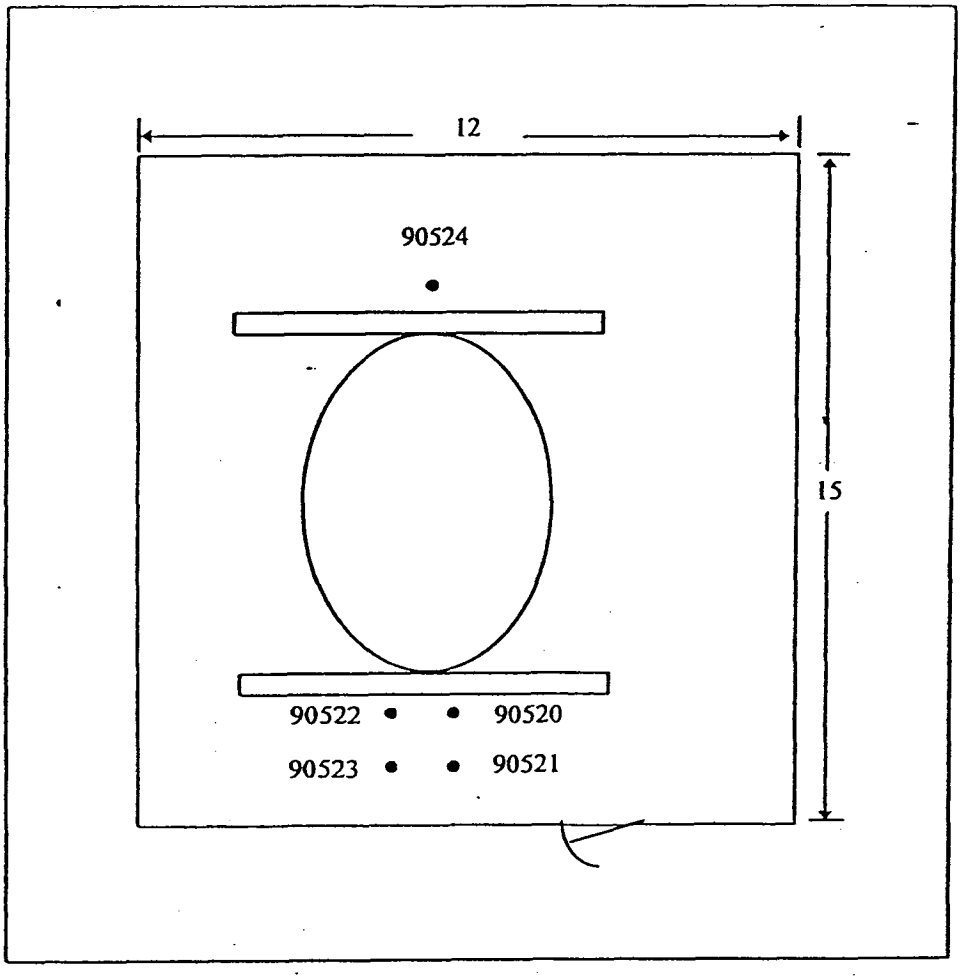
Removal of oil stained rock underneath the transformer was accomplished to a depth of four feet directly beneath the casing drain valve. The deeper excavation proceeded, the more dark and more oil stained the rock became. It was not possible to remove all of the oil stained rock because this would have resulted in a complete undermining of the transformer support. Excavation did not reach the level of the soil because excavation had to stop before the stability of the transformer was threatened. Approximately 11 55-gallon barrels of rock was removed. Following excavation, a concrete surface was poured to fill-in the excavated area. Three samples of the rock were obtained prior to the start of excavation, and three samples were collected from the bottom of the excavation. All six samples were analyzed with the reported result "ND". This was expected since the samples collected on and around the transformer during the initial survey were all "ND".

BUILDING 122 PARCEL A TRANSFORMER V-2 SAMPLE LOCATION DIAGRAM



REPORT
HPS PCB TRANSFORMER REPAIR
BLDG. 122 SITE SAMPLING DIAGRAM
Enclosure (1)

BUILDING 306 SUBSTATION I PARCEL D SAMPLE LOCATION DIAGRAM



REPORT
HPS PCB TRANSFORMER REPAIR
BLDG. 306 SITE SAMPLING DIAGRAM
Enclosure (1)

PCB SURVEY AND SAMPLE DATA SHEET (ADD-ON SHEET)

Building: ~~UNK58~~ 306 Hunters Point Location: Substation

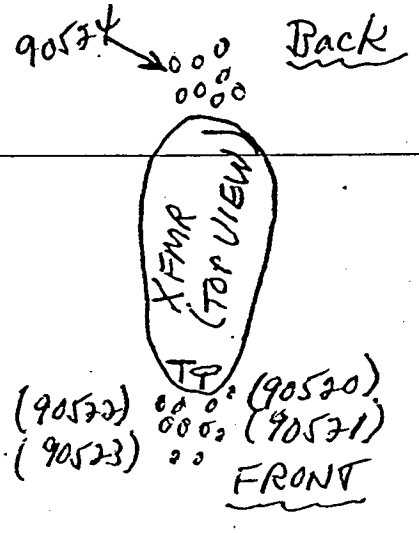
Equipment: TRANSFORMER Remarks: TWS 99-15

Sample ID	Date	Time	Type*	Size*	Location at Site
90520	8/9/99	1330	4		OIL-SOAKED Rock/gravel
90521	8/9/99	1332	4		" " " / "
90522	8/9/99	1340	4		Rock/gravel
90523	8/9/99	1348	4		" "
90524	8/9/99	1357	4		OIL-Soaked Rock/gravel
90525					
90526					
90527					
90528					
90529					
90530		NOT			USED
90531					
90532					
90533					
90534					
90535					
90536					
90537					
90538					
90539					
90540	8/9/99	1410	Blank		

Size: Leave blank unless other than 40 ml except 1000 ml for water "grab" samples. (in ml.)

Type: [1] external surface swipe, [2] spill swipe, [3] internal reservior swipe, [4] Solid spill sample, [5] oil resevoir sample, [6] water "grab" sample, [7] Blank

SKETCH BLOCK



Samples were taken, labeled, sealed, recorded and secured from tampering by authorized personnel as required by Section of "Master Work Plan for PCB Decontamination of Spill Sites and Machinery".

Name R. Ingram Badge Number 578222 Date 8/9/99

Name _____ Badge Number _____ Date _____

Name _____ Badge Number _____ Date _____

APPENDIX A

PCB SAMPLING LABORATORY RESULTS

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

Mare Island Naval Shipyard
Building 229, P.O. Box 2135
Vallejo, CA 94592-0135

Date Received: 08/13/99
Work Order No: 99-08-0379
Preparation: EPA 3550A
Method: EPA 8082

Project: Contract No. N00244-96-D-2009

Client Sample Number:	Lab Sample Number:	Date Collected:	Matrix:	Date Prepared:	Date Analyzed:	QC Batch ID:
9-0520 (306/Hunters Point)	99-08-0379-1	08/09/99	Solid	08/13/99	08/13/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	90	50-130		2,4,5,6-Tetrachloro-m-Xylene	60	50-130	

9-0521 (306/Hunters Point)	99-08-0379-2	08/09/99	Solid	08/13/99	08/13/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	91	50-130		2,4,5,6-Tetrachloro-m-Xylene	61	50-130	

9-0522 (306/Hunters Point)	99-08-0379-3	08/09/99	Solid	08/13/99	08/14/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	94	50-130		2,4,5,6-Tetrachloro-m-Xylene	69	50-130	

RL - Reporting Limit DF - Dilution Factor Qual - Qualifiers

CHAIN OF CUSTODY RECORD dtd 08/11/199

Doc Num 90474C

Page 1

ADDRESS BLOCK

From: Bob Turpin
SSPORTS Environmental Detachment, Bldg 213
Vallejo, CA 94592-2136
Tel (707) 562-3495 Fax (707) 562-3497

To: Cal Science Environmental Laboratories, Inc.
11631 Seaboard Circle
Stanton, CA 90680
Tel (714) 895-5494 Fax (714) 894-7501 Attn: W. H. Christensen

INSTRUCTION BLOCK

Turnaround Time: Rush

Written QC Report Required? Routine QC

Sample #	Bldg / Parcel-Site	Location		TWD	Date	Time	Type	Size	Analysis
9-0520	306 / Hunters Point	Oil-soaked Rock/Gravel	ND	1542	08/09/1999	13:20	Solid Spill	40 ml	0031AC 0034
9-0521	306 / Hunters Point	Oil-soaked Rock/Gravel	ND	1542	08/09/1999	13:32	Solid Spill	40 ml	0031AC 0034
9-0522	306 / Hunters Point	Rock/Gravel	ND	1542	08/09/1999	13:40	Solid Spill	40 ml	0031AC 0034
9-0523	306 / Hunters Point	Rock/Gravel	ND	1542	08/09/1999	13:48	Solid Spill	40 ml	0031AC 0034
9-0524	306 / Hunters Point	Oil-soaked Rock/Gravel	ND	1542	08/09/1999	13:57	Solid Spill	40 ml	0031AC 0034
~~9-0540~~	~~306 / Hunters Point~~	~~NA~~		~~1542~~	~~08/09/1999~~	~~14:10~~	~~Blank~~	~~40 ml~~	~~0031AC 0034~~

BJ 8/12/99
CAROL TELECON
W/W. ANDERSON
@ 1337)

CHAIN OF CUSTODY RECORD

Data Transferred by: (Signature)			
Relinquished by: (Signature)	Received by: (Signature)	Date: 8/11/99	Time: 1520
Relinquished by: (Signature)	Received by: (Signature)	Date: 8/11/99	Time: 1541
Relinquished by: (Signature)	Received by: (Signature)	Date: 8/12/99	Time: 1400
Relinquished by: (Signature)	Received for Laboratory (Signature)	Date: 8-12-99	Time: 1602

TOTAL P.86

714 895 5494 P.86/86

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Mare Island Naval Shipyard
Building 229, P.O. Box 2135
Vallejo, CA 94592-0135

Project: Contract No. N00244-98-D-2009

Date Received: 08/13/99
Work Order No: 99-08-0379
Preparation: EPA 3550A
Method: EPA 8082

LCS Sample Number	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-014-1,340	Solid	GC 10	08/11/99	08/13/99	9908132

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1260	114	122	50-135	6	0-25	

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

Mare Island Naval Shipyard
Building 229, P.O. Box 2135
Vallejo, CA 94592-0135

Date Received: 08/13/99
Work Order No: 99-08-0379
Preparation: EPA 3550A
Method: EPA 8082

Project: Contract No. N00244-96-D-2009

Client Sample Number:	Lab Sample Number:	Date Collected:	Matrix:	Date Prepared:	Date Analyzed:	QC Batch ID:
9-0523 (306/Hunters Point)	99-08-0379-4	08/09/99	Solid	08/13/99	08/14/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	99	50-130		2,4,5,6-Tetrachloro-m-Xylene	61	50-130	

9-0524 (306/Hunters Point)	99-08-0379-6	08/09/99	Solid	08/13/99	08/14/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	89	50-130		2,4,5,6-Tetrachloro-m-Xylene	76	50-130	

Method Blank	099-01-014-1,340	N/A	Solid	08/13/99	08/13/99	9908132

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Aroclor-1016	ND	1000	20		ug/kg	Aroclor-1248	ND	1000	20		ug/kg
Aroclor-1221	ND	1000	20		ug/kg	Aroclor-1254	ND	1000	20		ug/kg
Aroclor-1232	ND	1000	20		ug/kg	Aroclor-1260	ND	1000	20		ug/kg
Aroclor-1242	ND	1000	20		ug/kg	Aroclor-1262	ND	1000	20		ug/kg

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	83	50-130		2,4,5,6-Tetrachloro-m-Xylene	95	50-130	

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

Calscience
Environmental
Laboratories, Inc.

August 16, 1999

Russ Finlinson
Mare Island Naval Shipyard
Building 229, P.O. Box 2135
Vallejo, CA 94592-0135

Subject: **Calscience Work Order No.: 99-08-0379**
Client Reference: Contract No. N00244-96-D-2009

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 08/13/99 and analyzed in accordance with the attached chain-of-custody.

The results in this analytical report are limited to the samples tested and any reproduction of this report must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Larry Lem
Project Manager

William H. Christensen
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 99-08-0379

Qualifier	Definition
ND	Not detected at indicated reporting limit.

PCB SURVEY AND SAMPLE DATA SHEET (ADD-ON SHEET)

Building: Bld 122 ~~Naval Station~~ Hunters Point Location: _____

Equipment: V2 XFMR Remarks: _____

Sample ID	Date	Time	Type*	Size*	Location at Site
90499	7/1/99	11:10	5		XFMR DES. DRAIN PLUG
90500					
90501					
90502					
90503					
90504					
90505					
90506					
90507					
90508					
90509					
90510					
90511					
90512					
90513					
90514					
90515					
90516					
90517					
90518					
90519	7/2/99	14:20	Blank		

Size: Leave blank unless other than 40 ml except 1000 ml for water "grab" samples. (in ml.)

Type: [1] external surface swipe, [2] spill swipe, [3] internal reservior swipe, [4] Solid spill sample, [5] oil resevoir sample, [6] water "grab" sample, [7] Blank

SKETCH BLOCK

nples were taken, labeled, sealed, recorded and secured from tampering by authorized personnel as required by Section of "Master Work Plan for PCB Decontamination of Spill Sites and Machinery".

Name R. Chapman Badge Number 578127 Date 7/1/99

Name _____ Badge Number _____ Date _____

Name _____ Badge Number _____ Date _____

CHAIN O Y RECORD dtd 07/07/199 $ .084 Doc Num 90464M (2) age 1

ADDRESS BLOCK

From: Michael DeBattista
SSPORTS Environmental Detachment, Bldg 229
Vallejo, CA 94592-2136
Tel (707) 562-3326 Fax (707) 562-3275

To: Mare Island Environmental Laboratory
SSPORTS Environmental Detachment, Bldg 746
Vallejo, CA 94592
Tel (707) 562-3350 Fax (707) 562-7501 Attn: David Umino

INSTRUCTION BLOCK

Turnaround Time: Rush F3 24

Written QC Report Required? RWQCB

Sample #	Bldg / Parcel-Site	Location	TWD	Date	Time	Type	Size	Analysis
9-0499	122 / Hunters Point	XFMR Reservoir Drain Plug	1526	07/01/1999	11:10	Oil Resv. mm	40 ml	
9-0519	122 / Hunters Point	NA	1526	07/02/1999	14:20	Blank	40 ml	

CHAIN OF CUSTODY RECORD

Data Transferred by: (Signature)		Date: 7/7/99	Time: 1216
Relinquished by: (Signature)	Received by: (Signature) B. Jonalan	Date: 7/7/99	Time: 1217
Relinquished by: (Signature) B. Jonalan	Received by: (Signature) D. Pruitt	Date: 7/7/99	Time: 1526
Relinquished by: (Signature)	Received by: (Signature) D. Pruitt for D. Umino	Date: 7/14/99	Time: 0901
Relinquished by: (Signature)	Received for Laboratory: (Signature)	Date:	Time:

7.27C

MARE ISLAND NAVAL SHIPYARD
ENVIRONMENTAL LABORATORY
CODE 120 LAB
Calif. DHS Certificate No. 2249

7/13/99

LAB NO:	99MI00349	DATE SAMPLED:	7/01/99
DOC. NO:	90464	DATE REC'D :	7/07/99
SAMPLE NO:	9-0499	DATE EXTRACTED:	7/09/99
DESCRIPTION:	Hunters Point, Bldg. 122	DATE REPORTED:	7/13/99
EXTRACTION NO:	E4038		

TRANSF. V-2

ANALYSIS: POLYCHLORINATED BIPHENYLS
METHOD: Modified EPA 8081

Arochlor	PCB's	Report Limit
A1260	2 ppm	1 ppm

QA/QC Data is available from the Laboratory upon request.

7.27C

MARE ISLAND NAVAL SHIPYARD
ENVIRONMENTAL LABORATORY
CODE 120 LAB
Calif. DHS Certificate No. 2249

7/13/99

LAB NO: 99MI00349
DOC. NO: 90464
ANALYSIS: POLYCHLORINATED BIPHENYLS
METHOD: Modified EPA 8081

SLDG 122. TRANSF. V-2

Sample No.	Sample Type	Results	Arochlor	Report Limit
9-0499	Oil	2 ppm	A1260	1 ppm
9-0519	Swipe	ND		5 ug/swipe

ND = None Detected at or above reporting limit.

Analyst: P. Long for D. Pruitt Reviewed by: D. Pruitt for D. Umino Date: 7/13/99

Parcel	Building Number	Drawing Number	Substation Number or Location	Sample Location	Sample Number	Sample Results (Before Decon.) (µg/100cm²)	Sample Number	Sample Results (After Decon.) (µg/100cm²)	Sample Number	Sample Results (After Decon.) (µg/100cm²)	Sample Number	Sample Results (After Decon.) (µg/100cm²)	Sample Number	Sample Results (After Decon.) (µg/100cm²)
D	306	17	I	1	82130	5.7								
				2	82131	22.6	90737	ND						
				3	82132	5.5								
				4	82133	5.0								
				5	82134	ND								
				6	82135	ND								
				7	82136	ND								
D	311	18	O	1	82300	10.2	90708	ND						
				2	82301	29.7	90709	ND						
				3	82302	ND								
				4	82303	ND								
				5	82304	ND								
E	523	19		1	82183	5.6								
				2	82184	39.9	91400	ND						
				3	82185	16.0	91401	ND						
				4	82186	20.0	91402	ND						
E	527	20		1	82284	29.6	90998	7.0						
				2	82285	45.9	90999	13.0						
				3	82286	30.1	91000	10.0						
				4	82287	6593.4	91001	1386.0						
				5	82288	5.1								

Note: Sample points whose final results exceed 10 µg/100cm² have been marked with a two foot diameter circle of orange paint.

MARE ISLAND NAVAL SHIPYARD
ENVIRONMENTAL LABORATORY
CODE 120 LAB
Calif. DHS Certificate No. 2249

7/13/9

LAB NO: 99MI00349
DOC. NO: 90464
SAMPLE NO: 9-0519
DESCRIPTION: Hunters Point, Bldg. 122
EXTRACTION NO: SW9288

DATE SAMPLED: 7/02/9
DATE REC'D : 7/07/9
DATE EXTRACTED: 7/09/9
DATE REPORTED: 7/13/9

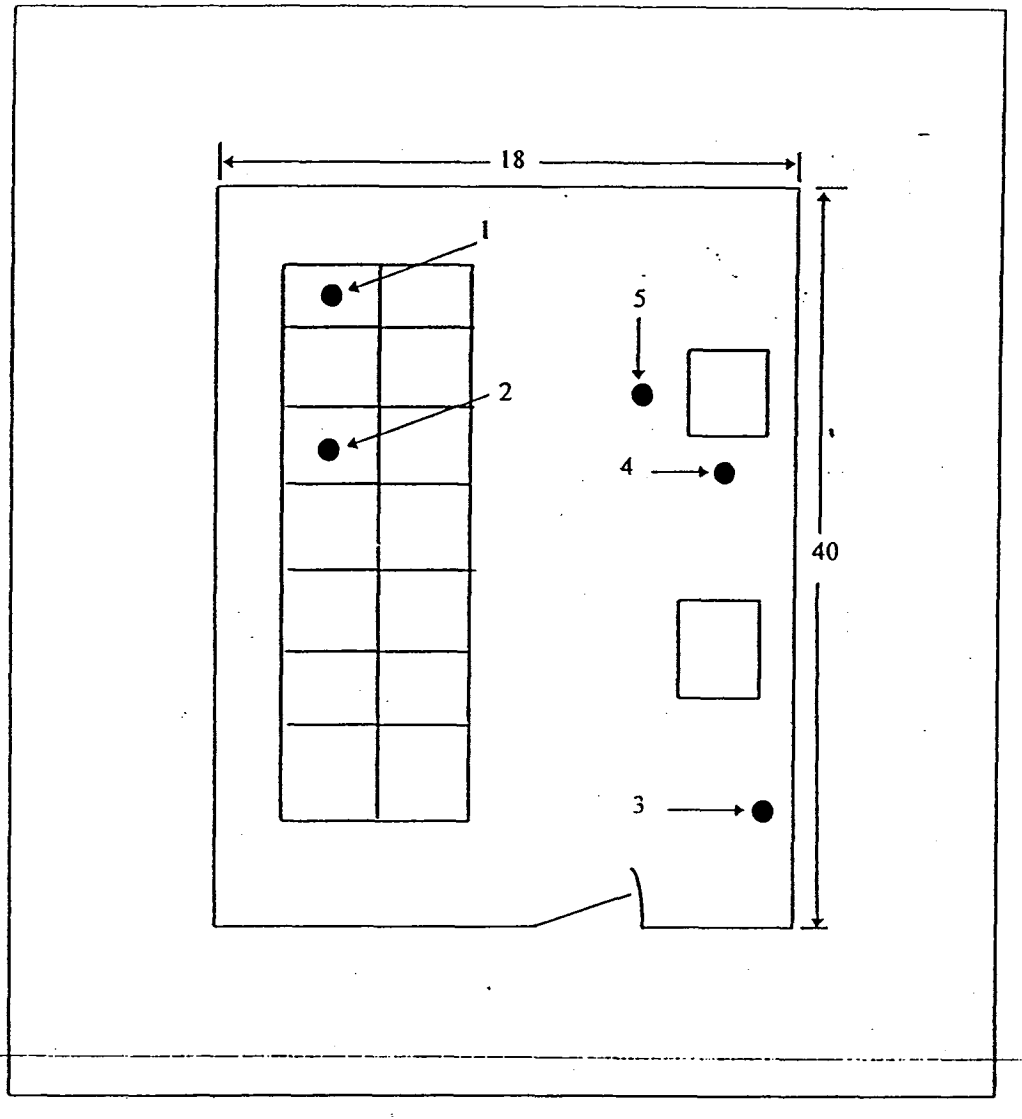
Transf. V-2-

ANALYSIS: POLYCHLORINATED BIPHENYLS
METHOD: Modified EPA 8081

Arochlor	PCB's	Report Limit
	ND	5 ug/swipe

QA/QC Data is available from the Laboratory upon request.

BUILDING 311 SUBSTATION O PARCEL D SAMPLE LOCATION DIAGRAM



FINAL REPORT
HPS PCB ABATEMENT PHASE II
INDIVIDUAL SITE SAMPLING DIAGRAMS
Enclosure (1)
Drawing 18

Parcel	Building Number	Drawing Number	Substation Number or Location	Sample Type	Sample Number	Sample Results ($\mu g/100 cm^2$)	Arochlor	Remarks
D	306	26	I	Swipe	82130	5.7	1254	Removed Transformer
				Swipe	82131	22.6	1254	Removed OCB "A"
				Swipe	82132	5.5	1254	Removed OCB "C"
				Swipe	82133	5.0	1254	Removed OCB "F"
				Swipe	82134	ND		Active Transformer I-1
				Swipe	82135	ND		Back Side of I-1
				Swipe	82136	ND		Duplicate 82135
					82140	ND		Trip Blank
D	307	27		Swipe	82295	ND		Transformer 16764-1 Sierra
				Swipe	82296	ND		Pad
				Swipe	82297	ND		Pad
				Swipe	82298	ND		Pad
					82299	ND		Trip Blank
* D	311	28	O	Swipe	82300	10.2	1254	Outside Pad
				Swipe	82301	29.7	1254	Outside Pad
				Swipe	82302	ND		Outside Pad
				Swipe	82303	ND		Outside Pad
				Swipe	82304	ND		Outside Pad
					82320	ND		Trip Blank

*Samples taken before cleanup
Concrete foundation surface

DEPARTMENT OF THE NAVY
Engineering Field Activity - West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-5006

BASE CONVERSION OFFICE
CODE 62A & CODE 62B
REAL ESTATE SUPPORT and ENVIRONMENTAL BUSINESS LINE TEAM
Facsimile Transmission Cover Sheet

Date: 6/8/99 Total Number of Sheets: 6
-including cover sheet-

TO:

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▸

To Scott Wald	From Jin-Nan Tuan
Dept./Agency T+EMI	Phone # 650-244-2595
Fax # 415-543-5480	Fax # 650-244-2654

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Activity/Company:
Telephone:
FAX Number:

FROM:

Telephone: (650) 244-_____ (DSN Prefix: 494-XXXX)
FAX Number: ☐ (650) 244-3128
☐ (650) 244-2654

COMMENTS: Refering to our phone conversation of 5/6/99. Attached are some PCB wipe samples taken on concrete foundation surfaces of outdoor substation site B311, located at middle of Beath 13 in Pascal D. for your information; namely ① Samples taken before cleanup in 1998, & ② Samples taken after cleanup in April 1999.

c.c. Bill Radzevich, EFA West

If there are problems with this transmission, please notify us by calling (650) 244-3055

② CH. DI... TODY RECORD dtd 04/05/199... 015 ... Doc.Num. 80368M ④ Pag.

ADDRESS BLOCK

From: Michael DeBattista
SSPORTS Environmental Detachment, Bldg 229
Vallejo, CA 94592-2936
Tel (707) 562-3328 Fax (707) 562-3278

To: Mare Island Environmental Laboratory
SSPORTS Environmental Detachment, Bldg 749
Vallejo, CA 94592
Tel (707) 562-3260 Fax (707) 562-7601 Attn: David Umine

INSTRUCTION BLOCK

Turnaround Time: Rush . R3.24
Written QC Report Required? RWQCB

Sample #	Bldg / Parcel-Site	Location		TWD	Date	Time	Type	Size	Analysis
9-0708	311 / Hunters Point	Resample of 8-2300	ND	1543	04/02/1999	9:25	Ext. Swipe mm	40 ml	
9-0709	311 / Hunters Point	Resample of 8-2301	ND	1543	04/02/1999	9:36	Ext. Swipe mm	40 ml	
9-0710	311 / Hunters Point	Concrete Pad	ND	1543	04/02/1999	9:44	Ext. Swipe mm	40 ml	
9-0713	311 / Hunters Point	NA	ND	1543	04/02/1999	9:58	Blank	40 ml	

* Samples taken after cleanup concrete foundation surface

JUN 08 '99 02:56PM WESTDIV CODE 18
JUN-07-1999 13:45 SSPORTS ENVIRON DET

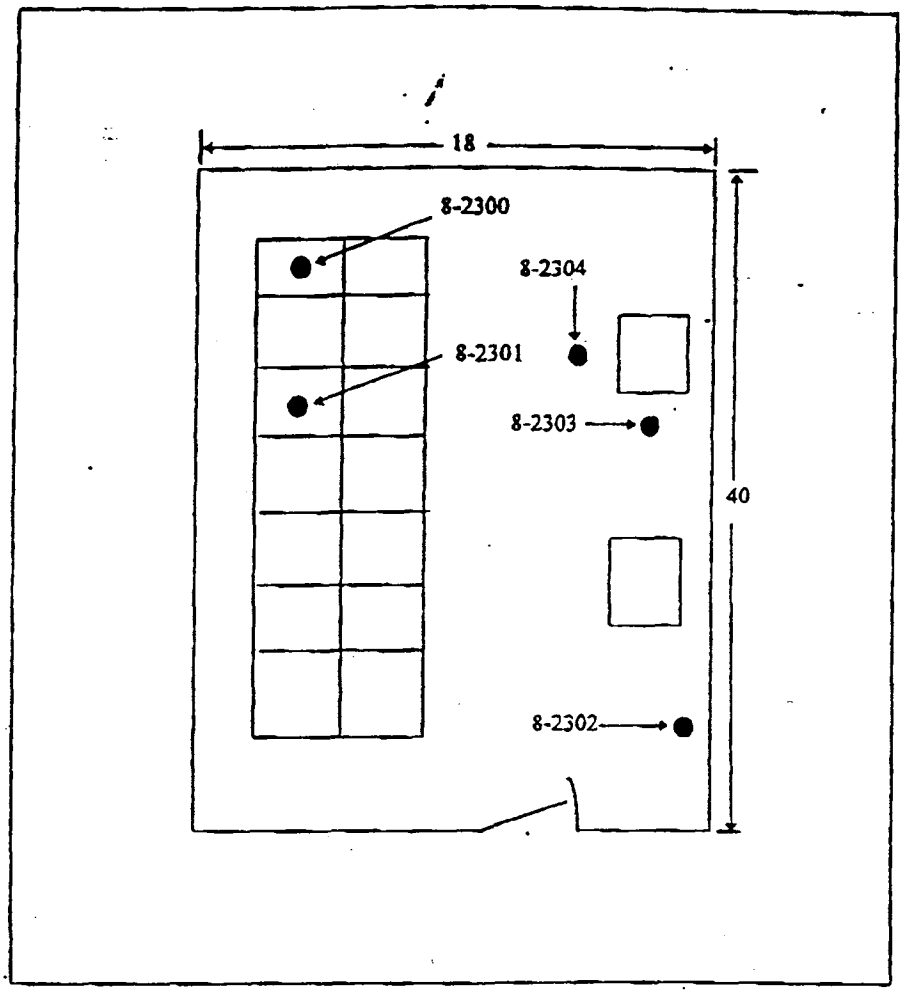
6/3 / 5420 - SAT

CHAIN OF CUSTODY RECORD

Date Transferred by: (Signature)	B. Joslin	Date: 4/5/99	Time: 0920
Relinquished by: (Signature) [signature]	Received by: (Signature) B. Joslin	Date: 4/5/99	Time: 0921
Relinquished by: (Signature) B. Joslin	Received by: (Signature) D. Pruitt	Date: 4/5/99	Time: 1410
Relinquished by: (Signature)	Received by: (Signature) D. Pruitt for D. Umine	Date: 4/14/99	Time: 1625
Relinquished by: (Signature)	Received for Laboratory: (Signature)	Date:	Time:

P.4/6
P.02

BUILDING 311 SUBSTATION O PARCEL D SAMPLE LOCATION DIAGRAM



MARE ISLAND NAVAL SHIPYARD
ENVIRONMENTAL LABORATORY
CODE 120 LAB
Calif. DHS Certificate No. 2249

11/04/98

LAB NO: 99MI00158
DOC. NO: 90368
ANALYSIS: POLYCHLORINATED BIPHENYLS
METHOD: Modified EPA 8081

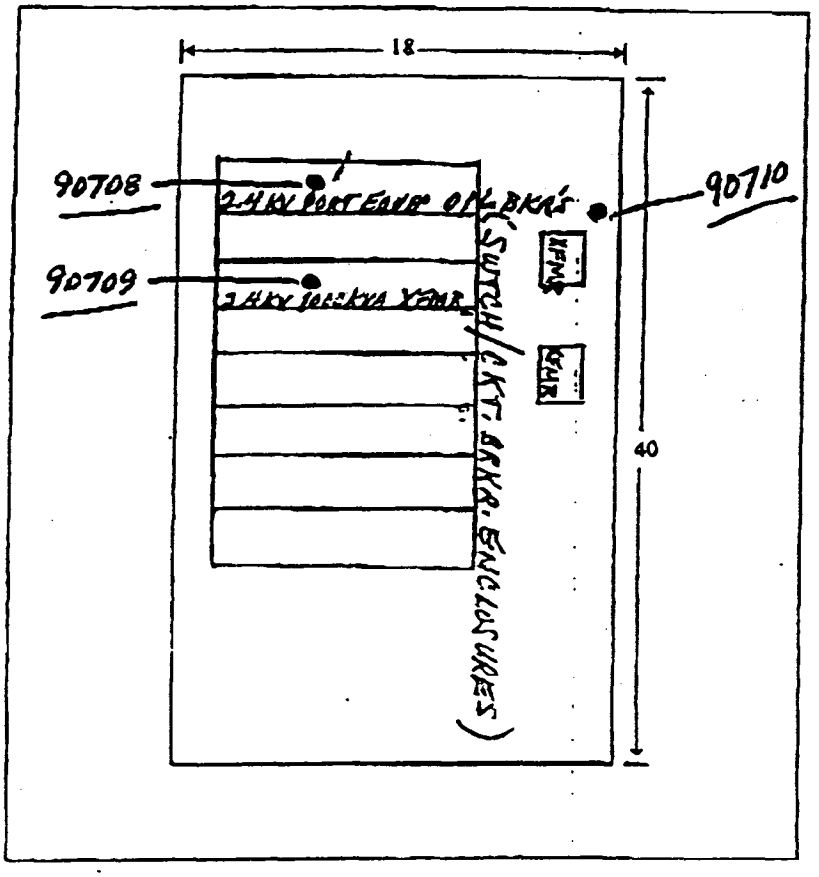
Sample No.	Sample Type	Results	Arochlor	Report Limit
9-0708	Swipe	ND		5 ug/swipe
9-0709	Swipe	ND		5 ug/swipe
9-0710	Swipe	ND		5 ug/swipe
9-0713	Swipe	ND		5 ug/swipe

ND = None Detected at or above reporting limit.

Analyst: R. Long for D. Smith Reviewed by: D. Pruett for D. Unias Date: 4/14/99

5

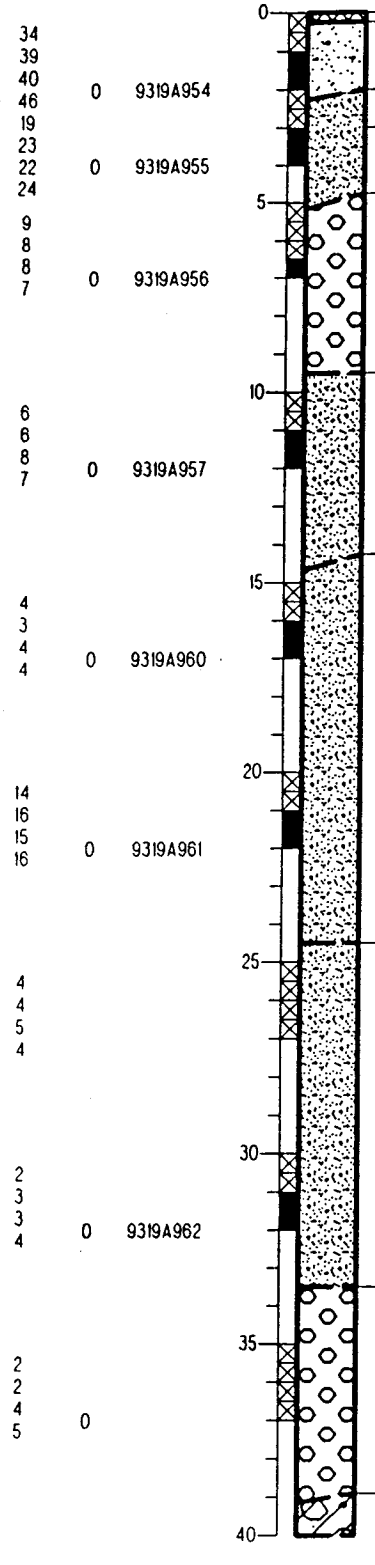
BUILDING 311 SUBSTATION O DIAGRAM



N

TWD 9?-1543
Initial Issue
Enclosure (1)
Page 1

Log of Boring: IR22B012
Equipment: Drill Systems 1000 (ACH), 10 in. diam.
Elevation: GS 8.28 ft.
Date: 05/13/1993
Total Depth: 47 ft.



ASPHALT

LIGHT BROWNISH GRAY WELL-GRADED SAND WITH GRAVEL (SW)
10YR6/2, loose, dry,
65% fine- to coarse-grained sand, 30% fine to coarse subangular to angular serpentinite and chert gravel,
5% lean clay, fill

BROWN TO DARK BROWN POORLY GRADED SAND WITH GRAVEL (SP)
10YR4/3, loose, moist,
60% coarse-grained sand, 25% fine to coarse subangular serpentinite and chert gravel, 10% lean clay,
5% trash debris, fill

Color change to very dark gray (10YR3/1), wet at 3 ft.

VERY DARK GRAY POORLY GRADED GRAVEL WITH SAND (GP)
10YR3/1, very loose, wet,
80% subangular to angular serpentinite gravel,
15% coarse-grained sand, 5% lean clay, fill

DARK GRAY POORLY GRADED SAND (SP)
10YR4/1, loose, wet,
80% sand, 15% shell fragments, 5% clay

VERY DARK GRAY POORLY GRADED SAND WITH GRAVEL (SP)
5YR3/1, loose, wet,
70% sand, 15% fine subangular to rounded chert and serpentinite gravel, 15% shell fragments

Color change to very dark grayish brown (10YR4/2),
5% clay at 21 ft.

VERY DARK GRAYISH BROWN POORLY GRADED SAND (SP)
10YR4/2, loose, wet,
70% sand, 20% shell fragments, 10% fine rounded serpentinite and chert gravel

DARK GRAY POORLY GRADED GRAVEL WITH SAND (GP)
5Y4/1, loose, wet,
65% subangular to subrounded chert gravel,
20% medium- to coarse-grained sand, 10% clay,
5% shell fragments

DARK GREENISH GRAY CLAYEY GRAVEL WITH SAND (GC)
5G4/1, loose, wet,
65% subangular to subrounded chert gravel, 20% medium- to coarse-grained sand, 15% clay, trace shell fragments

PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR22B012
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 081405		11/93	

Log of Boring: IR22B012
Equipment: Drill Systems 1000 (ACH), 10 in. diam.
Elevation: GS 8.28 ft.
Date: 05/13/1993
Total Depth: 47 ft.

Blows/6"	OVA (ppm)	Sample Number	Depth (ft.)	Sample
10			40	
13				
13				
15	0			
3			45	
4				
14				
15	0			
			50	

DARK YELLOWISH BROWN CLAYEY SAND (SC)
10YR4/6, medium dense, moist,
70% fine-grained sand, 20% fat clay, 10% fine to medium subangular to subrounded gravel,
Undifferentiated Sedimentary deposits

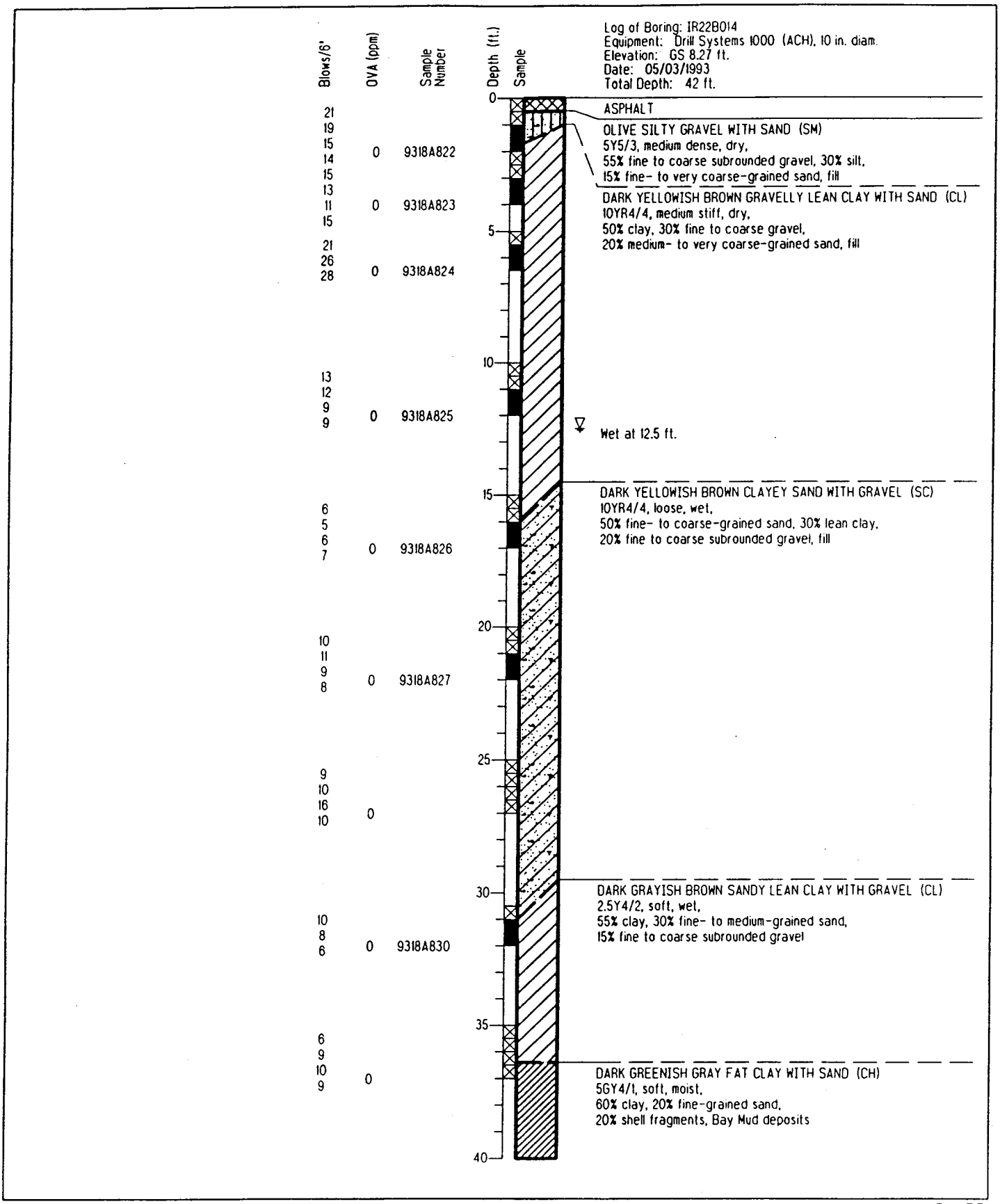
Bottom of boring at 47 feet. Boring backfilled with bentonite cement grout (5/13/93). Grab water sample 9319A958 and duplicate sample 9319A959 collected.

PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR22B012
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 081405		11/93	



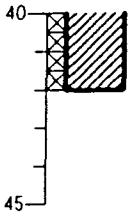
PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR22B014
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 081405		11/93	

Blows/6"	OVA (ppm)	Sample Number	Depth (ft.)	Sample
4			40	
8				
6				
7	0			
			45	



Log of Boring: IR22B014
Equipment: Drill Systems 1000 (ACH), 10 in. diam.
Elevation: GS 8.27 ft.
Date: 05/03/1993
Total Depth: 42 ft.

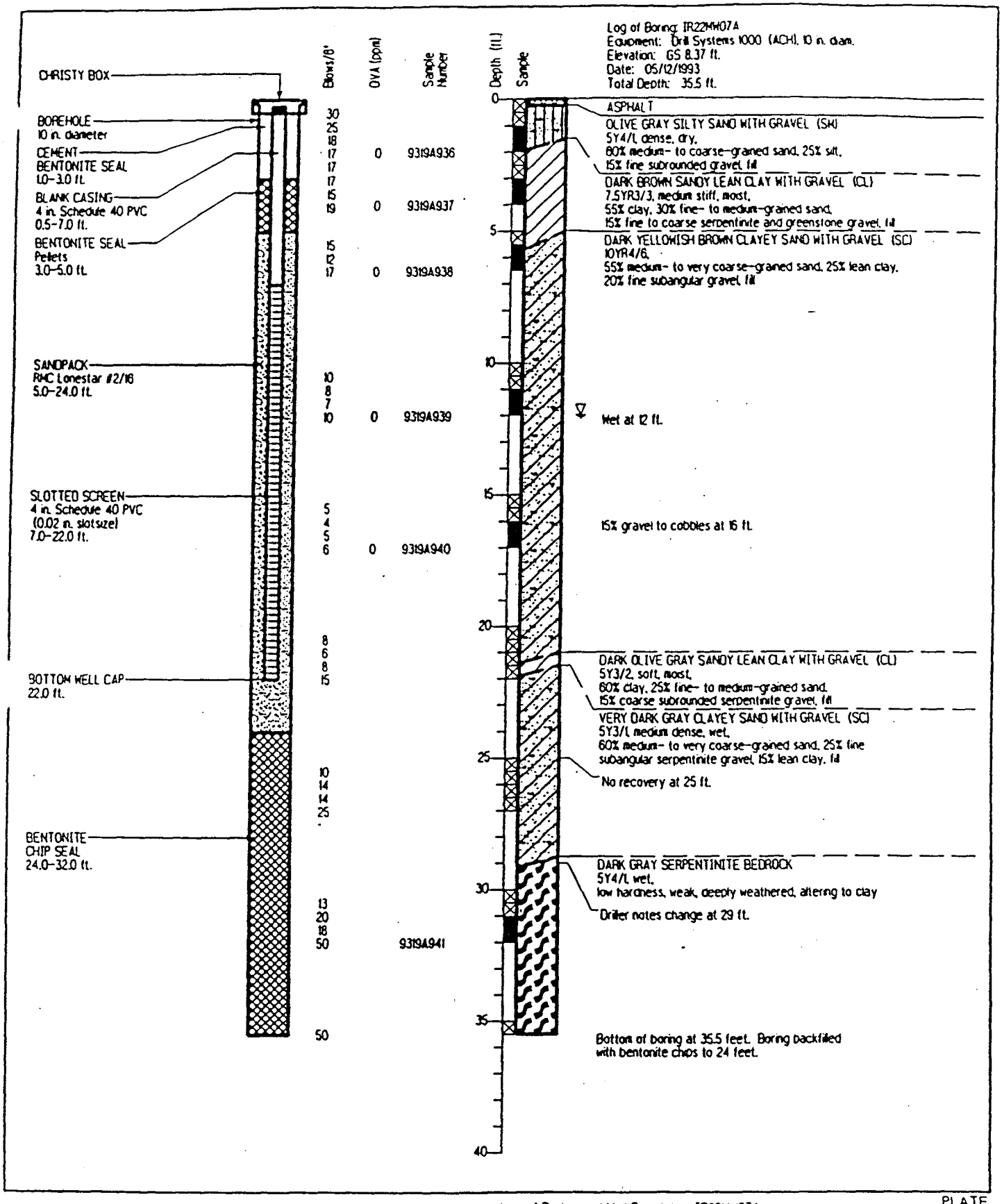
Bottom of boring at 42 feet. Boring backfilled with bentonite cement grout (5/03/93). Grab water sample 9318A828 and duplicate sample 9318A829 collected.

PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR22B014
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 081405		11/93	

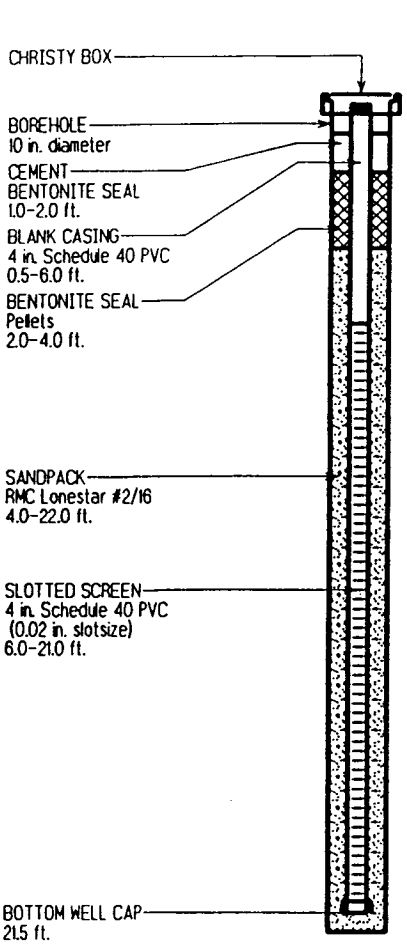


PLATE

Harding Lawson Associates
Engineering and
Environmental Services

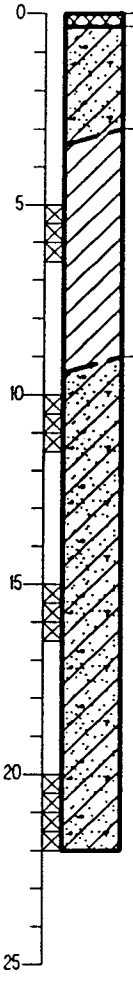
Log of Boring and Well Completion IR22MW07A
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 081405		11/93	



Blows/6"	OVA (ppm)	Sample Number
	0	
14		
15		
19	0	
7		
8		
6	0	
4		
5		
9	0	
6		
8		
14		
9	0	

Log of Boring: IR22MW20A
Equipment: Drill Tech DK-40 (ACH), 10 in. diam.
Elevation:
Date: 10/06/1994
Total Depth: 22 ft.



ASPHALT

DARK GRAYISH BROWN CLAYEY SAND WITH GRAVEL (SC)
2.5Y4/2, medium dense, dry,
50% fine to coarse sand, 30% lean clay,
20% fine to coarse chert and serpentinite gravel, fill

DARK YELLOWISH BROWN SANDY LEAN CLAY (CL)
10YR4/4, hard, moist,
70% clay, 25% fine to coarse sand,
5% fine to coarse serpentinite gravel, fill

DARK YELLOWISH BROWN CLAYEY SAND WITH GRAVEL (SC)
10YR4/4, medium dense, wet,
65% fine to coarse sand, 20% lean clay,
15% fine to coarse serpentinite gravel, fill

Change to 45% sand, 30% gravel, 25% clay at 15 ft.

Bottom of boring at 22 feet.

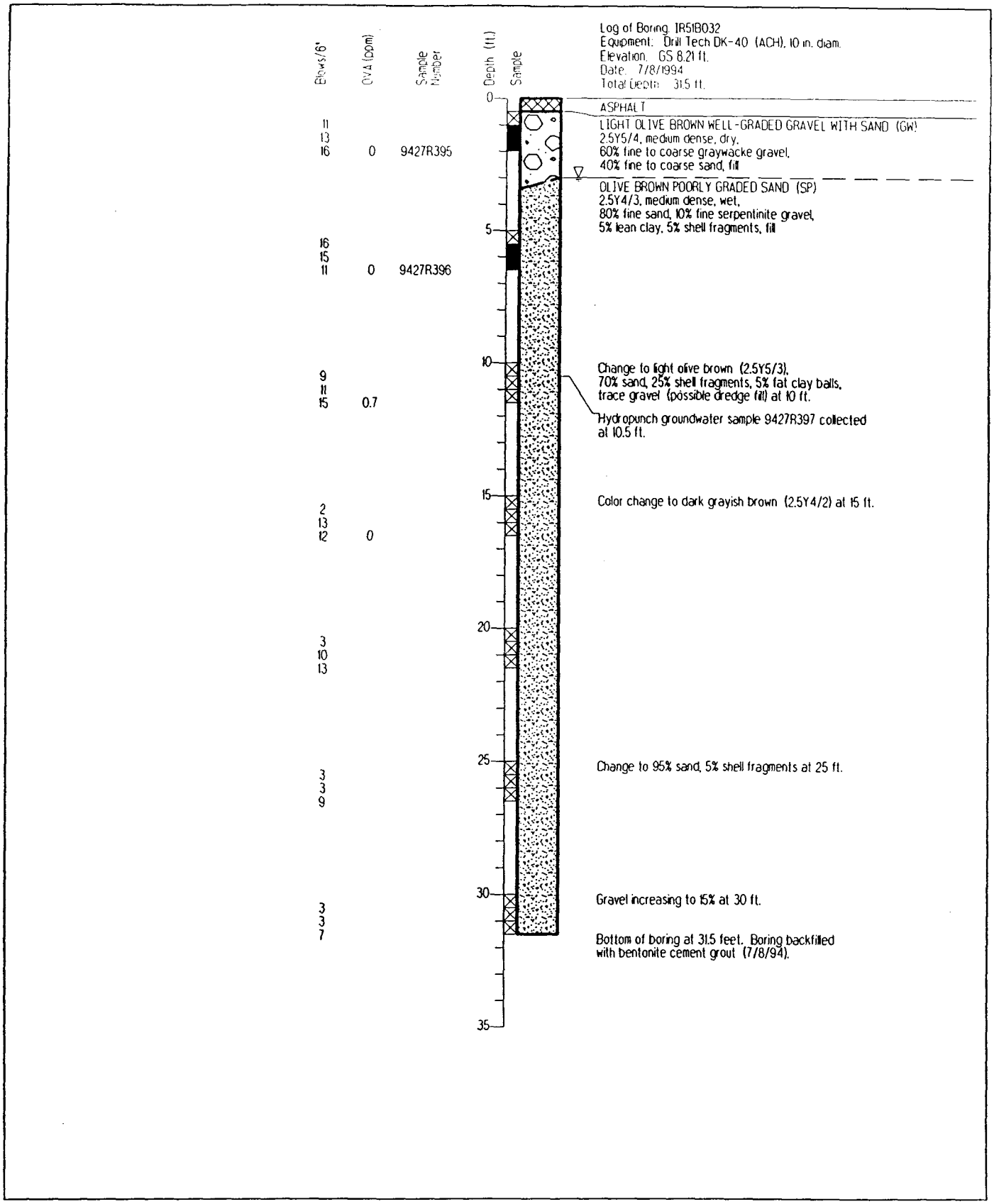
Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring and Well Completion IR22MW20A

PLATE

Engineering Field Activity West
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		12/94	



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring IR51B032

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

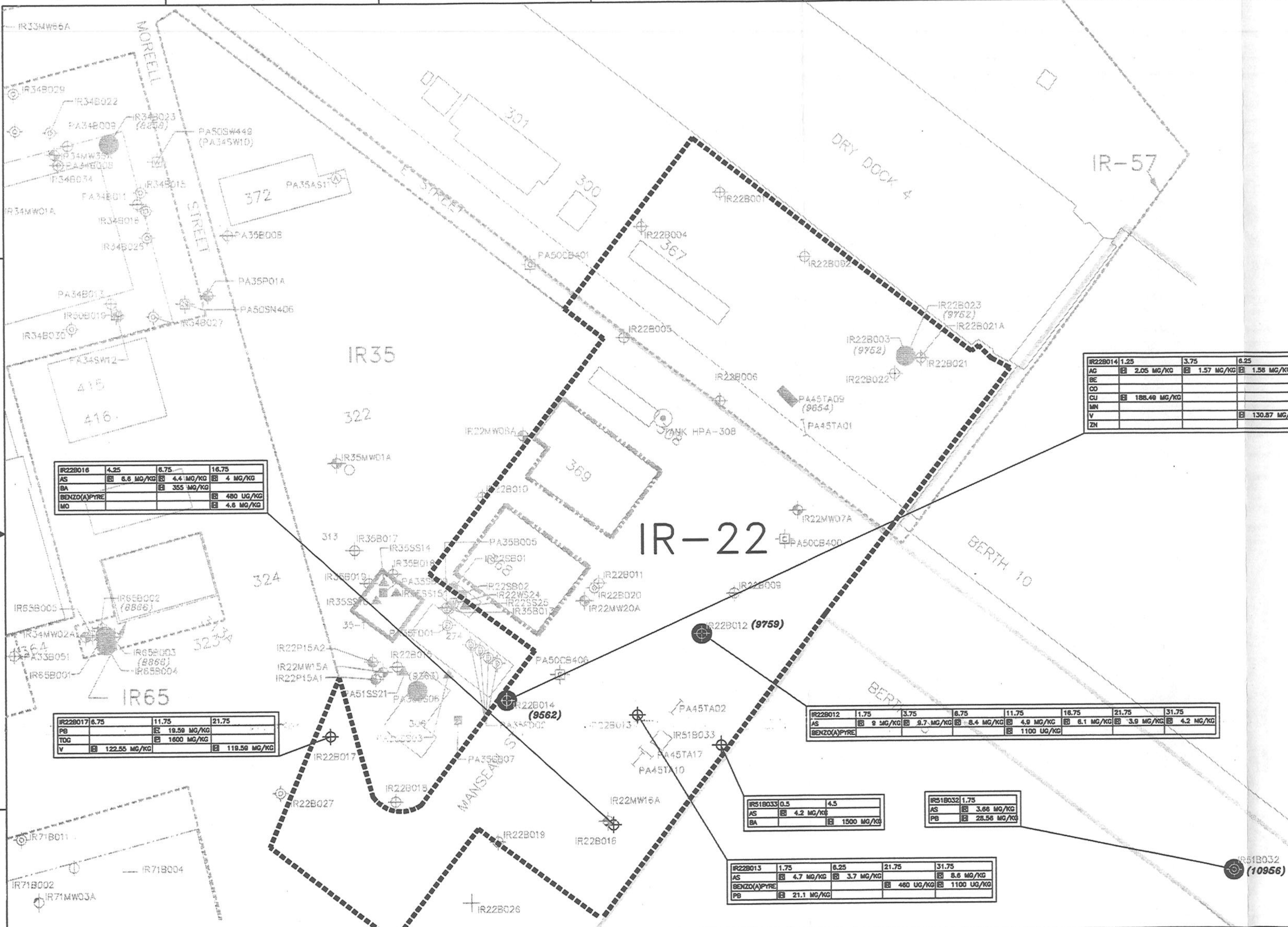
SYM NO.	SYM	DESCRIPTION
1		A–AQUIFER MONITORING WELL
2		B–AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A–AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17		FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND–AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A–AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

REV –
SH 1
DWG NO. 222062

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.06–2 SHT 1 of 3
PARCEL D
IR–22 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 2220621_.DWG



IR22B014	1.25	3.75	6.25	11.75	21.75	31.75
AG	H 2.05 MG/KG	H 1.57 MG/KG	H 1.58 MG/KG	H 2.35 MG/KG	H 3.02 MG/KG	H 2.94 MG/KG
BE				H 1.07 MG/KG	H 1.21 MG/KG	
CO					H 80.75 MG/KG	H 61.75 MG/KG
CU	H 188.49 MG/KG				H 137.46 MG/KG	
MN				H 1525.09 MG/KG	H 1750.86 MG/KG	H 2023.69 MG/KG
V			H 130.87 MG/KG	H 217.03 MG/KG	H 232.86 MG/KG	H 168.9 MG/KG
ZN						H 201.63 MG/KG

IR22B016	4.25	6.75	16.75
AS	R 6.6 MG/KG	R 4.4 MG/KG	R 4 MG/KG
BA		H 355 MG/KG	
BENZO(A)PYRE			R 480 UG/KG
MO			H 4.6 MG/KG

IR22B017	6.75	11.75	21.75
PB		R 19.59 MG/KG	
TOG		P 1600 MG/KG	
V	H 122.55 MG/KG		H 119.59 MG/KG

IR22B012	1.75	3.75	6.75	11.75	16.75	21.75	31.75
AS	R 9 MG/KG	R 9.7 MG/KG	R 8.4 MG/KG	R 4.9 MG/KG	R 6.1 MG/KG	R 3.9 MG/KG	R 4.2 MG/KG
BENZO(A)PYRE				R 1100 UG/KG			

IR51B033	0.5	4.5
AS	R 4.2 MG/KG	
BA		H 1500 MG/KG

IR51B032	1.75
AS	R 3.66 MG/KG
PB	R 28.56 MG/KG

IR22B013	1.75	6.25	21.75	31.75
AS	R 4.7 MG/KG	R 3.7 MG/KG		R 8.6 MG/KG
BENZO(A)PYRE			R 460 UG/KG	R 1100 UG/KG
PB	R 21.1 MG/KG			

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs)

ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (μg/kg).

- R EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- R EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- H EXCEEDS HPAL
- P EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.06-2 SHT 2 of 3

PARCEL D
IR-22 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 222062 SH 2 REV 1

FILE NAME: 2220622_.DWG

IR-22

IR22B011	1.75	3.75	6.25	11.75	16.75	21.75	31.75
TOG			2500 MG/KG				
V	123 MG/KG	143 MG/KG	145 MG/KG	125 MG/KG	138 MG/KG	151 MG/KG	156 MG/KG
ZN			256 MG/KG				

IR22MW07A	1.75	6.25	11.75	16.75
AS	7.27 MG/KG			
V		120.99 MG/KG	159.8 MG/KG	138.56 MG/KG

IR22B008	1.75	3.75	6.75	16.75	21.75	31.75
AS	5.67 MG/KG	9.8 MG/KG	4.28 MG/KG	3.95 MG/KG	3.7 MG/KG	4.87 MG/KG
PB	29.28 MG/KG	10.33 MG/KG				

IR22B027	1.5	8	16.5	27
AS	6.1 MG/KG			7.9 MG/KG
CR	514 MG/KG			
V		162 MG/KG	151 MG/KG	

IR22B026	6.38	26.5	41.5
AS	3.8 MG/KG		
CO		43 MG/KG	
MN			2540 MG/KG
V		120 MG/KG	128 MG/KG
ZN			147 MG/KG

PA45TA10	4.45
AS	4.51 MG/KG

IR22B019	1.75	21.75	31.75
AG	2.27 MG/KG		3.04 MG/KG
BA	642.61 MG/KG		
BE	.87 MG/KG		1.27 MG/KG
CO			66.26 MG/KG
MN	1619.82 MG/KG		2006.89 MG/KG
PB	9.15 MG/KG		
TOG		1600 MG/KG	
V			218.28 MG/KG
ZN	119.5 MG/KG		

SYMBOL	DESCRIPTION
PA24MW03A	A–AQUIFER MONITORING WELL
IR26MW42B	B–AQUIFER MONITORING WELL
IR06MW46F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR48B036	SOIL BORING/GRAB GROUNDWATER
IR48B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
150	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
UST29-1310	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
ASWTU	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:
1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs)
ANALYTE
CONCENTRATIONS FOR INORGANICS AND TPH–g, TPH–d, TPH–mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg). CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).
- EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS NON–CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS HPAL
- EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.06–2 SHT 3 of 3
PARCEL D
IR–22 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

REV 1 | SH 3 | DWG NO. 222062

1 FILE NAME: 2220623_.DWG

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

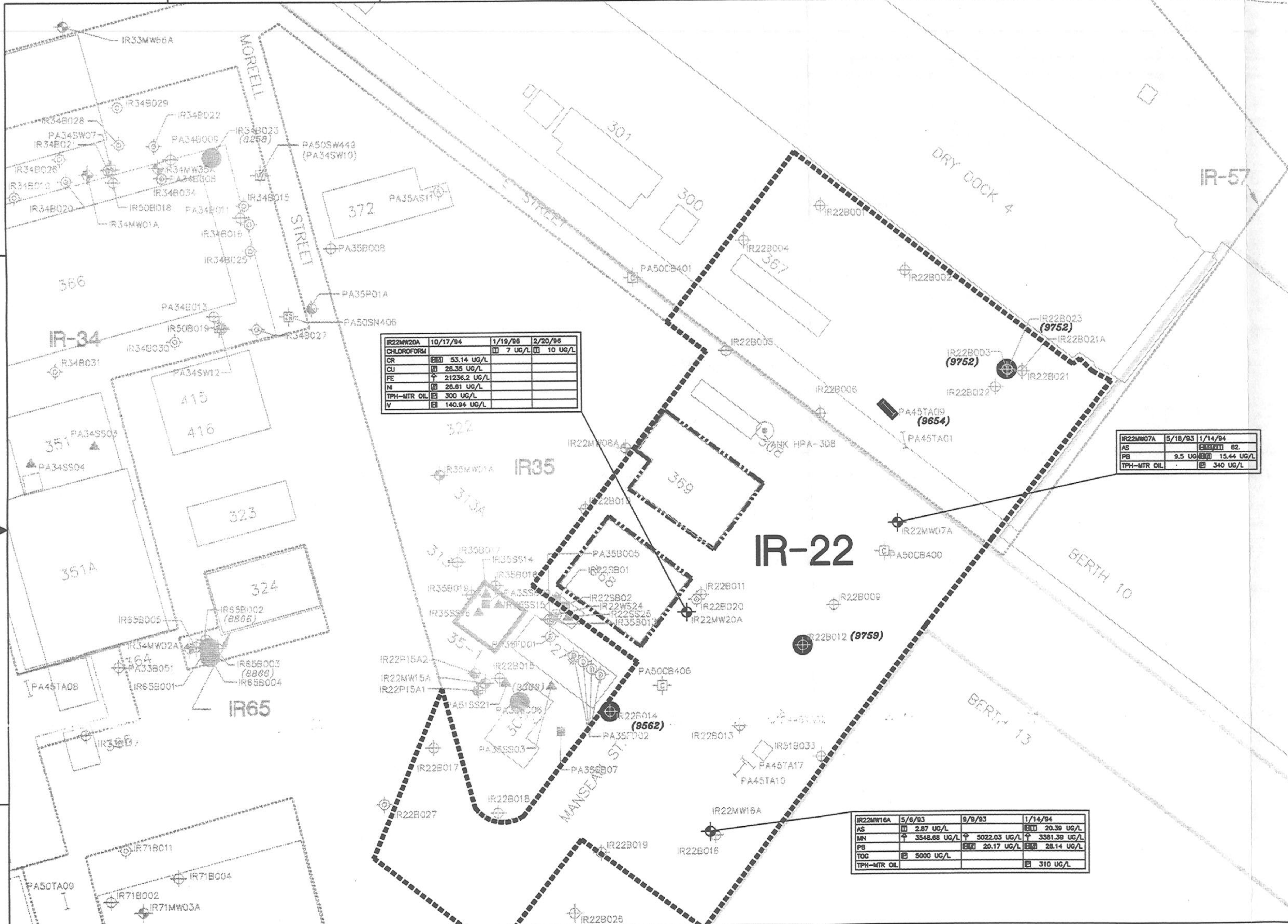
SYM NO.	SYM	DESCRIPTION
1		A-AQUIFER MONITORING WELL
2		B-AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A-AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17	D	FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND-AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A-AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

REV 1
SH 1
DWG NO. 222063

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.06-3 SHT 1 of 2
PARCEL D
IR-22 GROUNDWATER RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 2220631_.DWG



IR22MW20A	10/17/94	1/19/96	2/20/96
CHLOROFORM		[T] 7 UG/L	[T] 10 UG/L
CR	[H][M] 53.14 UG/L		
CU	[N] 26.35 UG/L		
FE	↑ 21236.2 UG/L		
NI	[N] 26.61 UG/L		
TPH-MTR OIL	[P] 300 UG/L		
V	[H] 140.94 UG/L		

IR22MW07A	5/18/93	1/14/94
AS		[H][M][T] 62.
PB	9.5 UG	[H][N] 15.44 UG/L
TPH-MTR OIL	·	[P] 340 UG/L

IR22MW16A	5/6/93	9/9/93	1/14/94
AS	[T] 2.87 UG/L		[H][T] 20.39 UG/L
MN	↑ 3548.68 UG/L	↑ 5022.03 UG/L	↑ 3381.39 UG/L
PB		[H][N] 20.17 UG/L	[H][N] 28.14 UG/L
TOC	[P] 5000 UG/L		
TPH-MTR OIL			[P] 310 UG/L

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE THAT EITHER NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION → (data box example)

DATE OF GROUNDWATER SAMPLE, G=GRAB, OR HYDROPUNCH SAMPLE DEPTH.

ANALYTE

CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)

- [T] EXCEEDS CARCINOGENIC TAP WATER PRG
- ↑ EXCEEDS NON-CARCINOGENIC TAP WATER PRG
- [N] EXCEEDS NAWQC
- [M] EXCEEDS MCL
- [P] EXCEEDS PETROLEUM SCREENING CRITERIA
- [H] EXCEEDS HGAL

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.06-3 SHT 2 of 2

PARCEL D
IR-22 GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 222063 | SH 2 | REV –

FILE NAME: 2220632_.DWG

IR-32

DRAFT FINAL
PARCEL D
RISK MANAGEMENT REVIEW PROCESS

DATED 20 JUNE 2000

LIST OF CONTENTS: IR-32

SITE IR-32: DE MINIMIS AREA 11367 (GRID CELL BH23)

Operational History and Site Characterization

De minimis area 11367 is located about 25 feet northeast of Building 383. Electrical equipment, switch boxes, and crane parts are currently stored on exposed soil in this area. The source of contamination may be related to a surface spill of petroleum hydrocarbons. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (the City) is proposing that the area be zoned for port priority use, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area. Based on a review of the data, the Navy believes that the area is adequately characterized for remedial investigation and feasibility study (RI/FS) purposes.

Data Evaluation and Risk Assessment

De minimis area 11367 is an 8- by 8-foot area located in grid cell BH23. Under an industrial reuse scenario, grid cell BH23 has an estimated excess lifetime cancer risk (ELCR) of 4×10^{-6} and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Because the ELCR exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BH23. Chemicals driving risk (benzo[a]pyrene, benzo[k]fluoranthene, and benzo[a]anthracene) were detected in boring PA32B003. These chemicals are bounded spatially (with decreasing trends) by borings PA32MW04, PA32B002, PA32B005, and PA51SS19, as shown on Figure 1.

De Minimis Area 11367 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.32 at 2.25 feet	3×10^{-6}	<1
Benzo(k)fluoranthene	0.32 at 2.25 feet	3×10^{-7}	<1
Benzo(a)anthracene	0.40 at 2.25 feet	3×10^{-7}	<1

Risk Management Factors

The maximum concentrations of all three chemicals driving risk are less than current screening criteria. The maximum concentration of benzo(a)pyrene (0.32 mg/kg) exceeds the 1995 industrial preliminary remediation goal (PRG) (0.26 mg/kg) but is less than the 1998 industrial PRG (0.36 mg/kg). The maximum concentration of benzo(a)anthracene (0.40 mg/kg) is less than the 1995 and 1998 industrial PRG (2.6 and 3.6 mg/kg, respectively). The maximum concentration of benzo(k)fluoranthene

(0.32 mg/kg) is less than the 1995 and 1998 industrial PRGs (26 and 36 mg/kg, respectively). In addition, the ELCR of grid cell BH23 is within the acceptable risk range because the planned reuse of the site is consistent with the historical industrial use of the site.

Groundwater Issues

At de minimis area 11367, groundwater is encountered at about 7 to 9 feet below ground surface (bgs). The risk management review (RMR) did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

Total oil and grease was detected at 4,200 mg/kg. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

✓ The Navy concluded that no Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response action is required for de minimis area 11367. However, the detection of gasoline (22,000 micrograms per liter) in groundwater at de minimis area 11367 will be addressed in the Parcel D petroleum hydrocarbon corrective action plan.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-32	BH23, 4×10^{-6}	DM 11367

Operational History	De minimis area 11367 is located about 25 feet northeast of Building 383. Electrical equipment, switch boxes, and crane parts are currently stored in this area.
• Is the site adequately characterized?	Yes. De minimis area 11367 is associated with boring PA32B003. Borings PA32MW04A, PA32B005, PA32B002, and PA51SS19 bound this de minimis area.
• Are the detected chemicals consistent with the operational history?	Yes. Polynuclear aromatic hydrocarbons (PAH) were detected at 2.25 feet in boring PA32B003. The source of PAHs may be related to surface spills of petroleum hydrocarbons.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	Yes. Arsenic, manganese, chloroform, and total petroleum hydrocarbons (TPH) as motor oil (TPH-mo) were detected in monitoring well PA32MW04A, near this de minimis area.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	No. Arsenic and manganese were the only chemicals driving risk in soil samples from borings PA32B003 and PA32MW04A.
• Has a potential source of the groundwater contamination been identified?	Yes. Arsenic and manganese are attributed to ambient concentrations found in the groundwater. No potential sources for chloroform or TPH-mo have been identified.

Has TPH been Detected over a Screening Criterion?	
• TPH as gasoline > 100 parts per million (ppm)?	No.
• TPH as diesel > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	No.
• Total recoverable petroleum hydrocarbons > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	Yes. 4,200 mg/kg

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is paved.
• Polychlorinated biphenyls (PCB) greater than 10 ppm?	No. PCBs were not detected in soil or groundwater.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 11367.

SUMMARY OF HUMAN HEALTH RISK AT PARCEL D UNDER 10^{-6} FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO (Continued)
PARCEL D, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

IR-Site	Grid Cell	Remedial or De Minimis Area	Chemical Risk Driver	95% UCL/ Risk	ELCR and HI Grid Value	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet bgs)	Detected Concentration (mg/kg)	1995 PRG (mg/kg)	1998 PRG (mg/kg)	HPAL (mg/kg)				
IR-22 (IR-35)	BB21	DM 9759	Not evaluated, COPCs are located at depths greater than 10 feet bgs. The human health risk assessment only evaluated soils down to a depth of 10 feet bgs.	Not evaluated	9×10^{-7} HI < 1	NA	NA	NA	NA	NA	NA	None identified.	Asphalt	None exceeding soil cleanup criteria.	De minimis area 9759 is located about 125 feet south of Building 368 and about 90 feet north of Berth No. 14. Building 368 was the former pipefitting shop. There is no information on the types of activities conducted in Building 368. PAHs were detected at a depth of 11.75 feet. The FS recommended to remediate the soil to a depth of 13 feet to remove potential source for leaching to the groundwater.
	BB22	DM 9562	Not evaluated, COPCs are located at depths greater than 10 feet bgs. The human health risk assessment only evaluated soils down to a depth of 10 feet bgs.	NA	8×10^{-6} HI < 1	NA	NA	NA	NA	NA	NA	NA	Asphalt	None exceeding soil cleanup criteria.	De minimis area 9562 is located about 25 feet south of Building 274 (IR-35) and about 270 feet north of Berth No. 14. Building 274 was the former decontamination training building. Records of activities conducted in this building are unavailable. No evidence of radioactive materials or use of radioactive materials was found in this building. Beryllium was detected at a depth of 11.75 feet. The detected concentration of beryllium is 1.07 mg/kg. The industrial PRG for beryllium is 1.11 mg/kg, while the HPAL is 0.71 mg/kg. The FS recommended to remediate the soil to a depth of 13 feet to remove potential source for leaching to the groundwater.
IR-22	BF20	DM 10956	Aroclor-1260 Benzo(a)pyrene	1×10^{-6} 3×10^{-7}	2×10^{-6} HI < 1	IR51B032 IR51B032	1.75 6.75	0.22 0.04	0.34 0.26	1.3 0.36	NA NA	The source of the contaminants may be related to leaking transformers used in the area.	Asphalt	None exceeding soil cleanup criteria.	De minimis area 10956 is located on the South Pier adjacent to a building. This site was investigated due to an asphalt transformer pad located outside of substation O, which exhibited some staining.
IR-32 (IR-68)	BH23	DM 11367	Benzo(a)pyrene Benzo(a)anthracene Benzo(k)fluoranthene	3×10^{-6} 3×10^{-7} 3×10^{-7}	4×10^{-6} HI < 1	PA32B003 PA32B003 PA32B003	2.25 2.25 2.25	0.32 0.40 0.32	0.26 2.6 26	0.36 3.6 36	NA NA NA	The source of the contaminants may be related to a surface spill of petroleum hydrocarbons.	Asphalt	TOG: 4,200	IR-32 covers about 9.4 acres and includes the regunning pier and Buildings 370 and 383. Building 370 was used as a latrine. Building 383 was used for shipping and receiving by the Navy and was later leased to Westinghouse for warehouse and office spaces. Electrical equipment, switch boxes, and crane parts are currently stored on exposed soil adjacent to the northeast end of Building 383. De minimis area 11367 is located about 25 feet northeast of Building 383.
IR-33N	AV20	RA 33N-1	Benzo(a)pyrene Benzo(a)pyrene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(b)fluoranthene	4×10^{-6} — 4×10^{-7} 3×10^{-7} —	5×10^{-6} HI < 1	IR33B091 IR33B069 IR33B069 IR33B091 IR33B069	1.25 6.25 6.25 1.25 6.25	0.49 0.33 0.48 0.34 0.23	0.26 0.26 2.6 2.6 2.6	0.36 0.36 3.6 3.6 3.6	NA NA NA NA NA	Surface spillage near the former gasoline dispenser island.	The area above former USTs S-304 and S-305, are covered by clean fill material. The areas surrounding the USTs are asphalt.	TRPH: 27,000 TPH-mo: 7,000 TPH-d: 2,800	IR-33N covers about 4.5 acres and consists of Buildings 302, 302A, and 304, and former USTs S-304 and S-305. These 7,000-gallon steel gasoline USTs were removed in August 1991. Remedial area 33N-1 is south of Building 304, in the area of the removed USTs. The Navy used Building 304 as a service station.
	AU20	DM 7657	Arsenic Benzo(a)pyrene Beryllium	3×10^{-6} 3×10^{-7} 3×10^{-7}	4×10^{-6} HI < 1	IR33B062 IR50B022 IR33B062	2.25 5.75 2.25	24 0.03 1.1	2.0 0.26 3.9	3.0 0.36 3,400	11.1 NA NA	Suspected source are leaks from floor drains and a sump within Building 302A.	Concrete	None exceeding soil cleanup criteria.	De minimis area 7657 is near the southeastern corner of Building 302A. The Navy used Building 302A as a transportation shop. The activities at this building include vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304.
IR-33N (IR-33S)	AU21	DM 7560	Chromium Chromium VI (calculated based on chromium values)	1×10^{-6}	1×10^{-6} HI < 1	IR33B087	1.25	1,500 11.7	1,600 230	450 64	1,445 (sample-specific) NA	Chromium source may be related to serpentine fill.	Asphalt	None exceeding soil cleanup criteria.	De minimis area 7560 is about 25 feet from the southwestern corner of Building 302A. The Navy used Building 302A as a transportation shop. The activities at this building include vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304.

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-22	BC21 (098060, 098061, 099060)	2E-07 (2E-08)	Aroclor-1260 (2E-07)	0.044	IR51B033	4.50	0.04
IR-22	BC22 (098062, 098063)	NC	NE	NE	NE	NE	NE
IR-22	BF20 (109056)	2E-06 (1E-07)	Aroclor-1260 (1E-06)	0.22	IR51B032	1.75	0.2
			Benzo(a)pyrene (3E-07)	0.040	IR51B032	6.75	0.04
			Benzo(a)anthracene (3E-08)	0.036	IR51B032	6.75	0.04
			Benzo(b)fluoranthene (3E-08)	0.035	IR51B032	6.75	0.04
			Indeno(1,2,3-cd)pyrene (2E-08)	0.026	IR51B032	6.75	0.03
			Benzo(k)fluoranthene (1E-08)	0.013	IR51B032	6.75	0.01
IR-32 (IR-22, IR-35)	BB23 (097066)	NC	NE	NE	NE	NE	NE
IR-32 (IR-70)	BB25 (095073, 097073)	5E-06 (7E-07)	Arsenic (4E-06)	11	PA55SS15	0.75	12.4 *,α
			Arsenic	--	PA55B014	0.25	7.9 *
			Arsenic	--	PA55B014	5.50	7.2 *
			Arsenic	--	IR70B006	0.75	2.0
			Arsenic	--	IR70B006	6.25	0.62
			Benzo(b)fluoranthene (6E-08)	0.076	PA55B014	0.25	0.08
			Benzo(a)anthracene (3E-08)	0.037	PA55SS15	0.75	0.04

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-32 (IR-70) (Continued)	BB25 (095073, 097073) (Continued)	5E-06 (7E-07)	Chrysene (5E-09)	0.057	PA55B014	0.25	0.06
			4,4'-DDT (3E-10)	0.0023	PA55B014	0.25	0.002
			Trichloroethene (2E-10)	0.0020	PA55SS15	0.75	0.002
IR-32	BC24 (099069)	NC	NE	NE	NE	NE	NE
IR-32 (IR-55, IR-70)	BD25 (101073, 102073)	8E-07 (4E-08)	Beryllium (8E-07)	0.92	PA55SS02	0.75	0.92 α
			Beryllium	--	IR55B028	1.75	0.43
IR-32	BF23 (108067)	2E-07 (2E-08)	Aroclor-1260 (2E-07)	0.035	PA51SS19	1.75	0.04
IR-32	BG24 (112068)	NC	NE	NE	NE	NE	NE
IR-32	BH23 (113067)	4E-06 (3E-07)	Benzo(a)pyrene (3E-06)	0.32	PA32B003	2.25	0.3
			Benzo(a)anthracene (3E-07)	0.40	PA32B003	2.25	0.4
			Benzo(k)fluoranthene (3E-07)	0.32	PA32B003	2.25	0.3
			Benzo(b)fluoranthene (2E-07)	0.28	PA32B003	2.25	0.3
			Chrysene (3E-08)	0.32	PA32B003	2.25	0.3
			Carbazole (1E-09)	0.11	PA32B003	2.25	0.1
IR-32	BH24 (113070, 114068)	NC	NE	NE	NE	NE	NE

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

HI	Hazard Index
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
NC	Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.
NE	Not evaluated
a	The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.
d	The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.
e	Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME
f	The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.
g	If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.
h	Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).
i	The central nervous sysstem is the primary system affected by the indicated chemical, generally at the lowest dose levels.
j	Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.
k	Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.
l	The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.
m	The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
n	The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
o	The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
p	The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
q	The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
*	The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).
α	The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

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TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-22	BC22 (098062, 098063)	NC	<1	NE	NE	NE	NE	NE
IR-22	BF20 (109056)	2×10^{-6} (1×10^{-7})	<1	Aroclor-1260 (1×10^{-6}) Benzo(a)pyrene (3×10^{-7})	0.22 0.04	IR51B032 IR51B032	1.75 6.75	0.22 0.04
IR-32 (IR-22, IR-35)	BB23 (097066)	NC	<1	NE	NE	NE	NE	NE
IR-32 (IR-70)	BB25 (095073, 97073)	5×10^{-6} (7×10^{-7})	<1	Arsenic (4×10^{-6})	11	PA55SS15	0.75	12 α, #
IR-32	BC24 (099069)	NC	<1	NE	NE	NE	NE	NE
IR-32 (IR-55, IR-70)	BD25 (101073, 102073)	8×10^{-7} (4×10^{-8})	<1	NE	NE	NE	NE	NE
IR-32	BF23 (108067)	2×10^{-7} (2×10^{-8})	<1	NE	NE	NE	NE	NE
IR-32	BG24 (112068)	NC	<1	NE	NE	NE	NE	NE
IR-32	BH23 (113067)	4×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (3×10^{-6}) Benzo(a)anthrancene (3×10^{-7}) Benzo(k)fluoranthene (3×10^{-7})	0.32 0.4 0.32	PA32B003 PA32B003 PA32B003	2.25 2.25 2.25	0.32 # 0.40 0.32
IR-32	BH24 (113070, 114068)	NC	<1	NE	NE	NE	NE	NE

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Notes:

bgs	Below ground surface
COPC	Chemical of potential concern
ELCR	Excess lifetime cancer risk
EPC	Exposure point concentration
HI	Hazard index
mg/kg	Milligram per kilogram
NC	Not calculated; no carcinogenic COPCs identified in this exposure area; therefore, total segregated HI not calculated
NE	Not evaluated
#	Detected concentration exceeds U.S. Environmental Protection Agency (EPA) Region IX preliminary remediation goal (PRG) for industrial soil
α	Detected concentration exceeds Hunters Point ambient level (HPAL)

a The number presented in parentheses is another IR site with which the subject industrial exposure area is associated.

b The exposure area presented is based on a 0.5-acre exposure area.

c The number presented in parentheses is the associated exposure area for the residential scenario based on a 2,500-square foot exposure area. The total ELCRs for the residential scenario are presented in Table N.5-9, and the total HIs for the residential scenario are presented in Table N.5-10.

d The total ELCR presented is for the RME case. The value presented in parentheses is for the average exposure case. The total ELCR evaluates the ingestion of, dermal contact with, and inhalation of volatile organic compounds (VOC) and particulate emissions from the soil exposure pathway.

e The total HIs for the industrial scenario are presented in Table N.I-1 of Attachment N-I.

f Only the COPC-specific ELCRs for COPCs contributing about 90 percent of the total ELCRs that exceed 1×10^{-4}, COPCs contributing a risk exceeding 1×10^{-6} under the RME case, or lead concentrations exceeding 1,000 mg/kg are listed.

g The value presented is the EPC assumed for the COPCs contributing significantly to the total ELCR under the RME case.

h If the COPC-specific total ELCR exceeding 1×10^{-6} can be attributed to one or several sampling locations, the sampling location, depth, and concentration are listed.

i Chromium VI was not speciated; therefore, for all IR-sites except IR-36S, a surrogate chromium VI value was calculated assuming 0.78 percent of the total chromium value (see Attachment N-C). For IR-36S, a surrogate chromium VI value was calculated assuming 3.3 percent of the total chromium value.

TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-22	097058	IR22B009	9319A943	05/12/93	3.75	56.2	0.31	ND	0.47
		IR22B009	9319A944	05/12/93	6.75	7.1	0.31	ND	0.58
		IR22B009	9319A945	05/12/93	11.75	54.2	0.41	ND	0.35
		IR22B009	9319A948	05/12/93	16.75	40.5	0.40	ND	0.53
		IR22B009	9319A949	05/12/93	21.75	43.8	0.42	ND	1.2
		IR22B009	9319A950	05/12/93	31.75	50.6	0.39	ND	0.99
	097059	IR22B012	9319A954	05/13/93	1.75	74.4	0.73	ND	0.10
		IR22B012	9319A955	05/13/93	3.75	67.7	0.73	0.17	0.10
		IR22B012	9319A957	05/13/93	11.75	48.6	0.85	ND	0.10
		IR22B012	9319A960	05/13/93	16.75	57.5	0.86	ND	0.10
		IR22B012	9319A961	05/13/93	21.75	49.6	0.76	ND	0.10
		IR22B012	9319A962	05/13/93	31.75	44.5	0.80	ND	0.10
	097061	IR22B013	9320A001	05/17/93	31.75	95.6	0.92	ND	1.0
		IR22B013	9320A994	05/17/93	1.75	39.2	0.74	0.16	0.10
		IR22B013	9320A995	05/17/93	3.75	59.3	0.71	ND	0.10
		IR22B013	9320A996	05/17/93	6.25	66.1	0.72	ND	0.10
		IR22B013	9320A997	05/17/93	11.75	79.0	0.79	ND	0.50
		IR22B013	9320A998	05/17/93	16.75	132	0.79	ND	0.10
		IR22B013	9320A999	05/17/93	21.75	117	0.80	ND	1.0
	097064	IR22B019	9318A831	05/03/93	1.75	158	0.60	0.86	0.22
		IR22B019	9318A832	05/03/93	3.75	91.8	0.55	0.55	0.20
		IR22B019	9318A833	05/03/93	6.25	53.0	0.34	0.21	0.06
		IR22B019	9318A834	05/03/93	11.75	57.0	0.34	ND	0.25
		IR22B019	9318A835	05/03/93	16.75	65.6	0.35	0.69	0.13
		IR22B019	9318A836	05/03/93	21.75	19.4	0.34	ND	0.92
		IR22B019	9318A838	05/03/93	31.75	91.3	0.59	0.79	0.22
	098056	IR22MW07A	9319A936	05/12/93	1.75	109	0.33	ND	0.39
		IR22MW07A	9319A937	05/12/93	3.75	109	0.33	ND	0.39
		IR22MW07A	9319A938	05/12/93	6.25	135	0.35	0.32	0.24
		IR22MW07A	9319A939	05/12/93	11.75	178	0.37	ND	0.56
		IR22MW07A	9319A940	05/12/93	16.75	148	0.37	ND	0.88
		IR22MW07A	9319A941	05/12/93	31.75	60.7	0.34	ND	1.3
	098063	IR22B016	9317A815	04/29/93	4.25	74.5	0.70	ND	0.05
		IR22B016	9317A816	04/29/93	6.75	114	0.70	ND	0.05
		IR22B016	9317A817	04/29/93	16.75	91.3	0.70	ND	0.05
		IR22B016	9317A818	04/29/93	26.75	60.7	0.76	ND	0.05
IR-32	097066	IR22B026	9605G052	01/31/96	1.50	124	0.08	ND	2.5
		IR22B026	9605G053	01/31/96	6.38	78.1	0.09	ND	0.05
		IR22B026	9605G054	01/31/96	11.38	53.5	0.09	0.12	0.05
		IR22B026	9605G055	01/31/96	16.25	63.0	0.09	0.21	0.05
		IR22B026	9605G056	02/01/96	21.25	79.6	0.10	0.08	0.05
		IR22B026	9605G057	02/01/96	26.50	93.0	0.09	0.09	0.05
		IR22B026	9605G058	02/01/96	31.25	71.6	0.09	0.08	0.05
		IR22B026	9605G059	02/01/96	41.50	81.9	0.09	ND	0.05
		IR22B026	9605G060	02/01/96	52.00	39.7	0.10	ND	1.2
	099069	PA32B001	9308D064	02/25/93	2.25	119	0.39	ND	0.05

TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-32	099069	PA32B001	93080065	02/25/93	4.25	72.4	0.38	ND	0.05
		PA32B001	93080066	02/25/93	6.75	23.1	0.38	ND	0.05
	112068	PA32B002	93080061	02/24/93	2.25	70.7	0.39	ND	0.05
		PA32B002	93080062	02/24/93	4.25	61.9	0.40	ND	0.05
		PA32B002	93080063	02/24/93	9.25	28.5	0.43	ND	0.05
	113067	PA32B003	93080058	02/24/93	2.25	80.1	0.39	ND	0.05
		PA32B003	93080060	02/24/93	6.75	77.4	0.40	ND	0.05
	113070	PA32B005	93080055	02/24/93	2.25	58.9	0.37	ND	0.05
		PA32B005	93080056	02/24/93	4.25	123	0.41	ND	0.05
		PA32B005	93080057	02/24/93	6.75	21.0	0.43	ND	0.05
	114068	PA32MW04A	93080051	02/24/93	2.25	94.1	0.40	ND	0.05
		PA32MW04A	93080052	02/24/93	4.25	152	0.40	ND	0.05
		PA32MW04A	93080053	02/24/93	6.75	27.3	0.40	ND	0.05
		PA32MW04A	93080054	02/24/93	9.25	28.6	0.41	ND	0.05
IR-33N	072061	IR09B028	9013Q164	03/30/90	0.75	205	1.9	ND	0.06
		IR09B028	9013Q165	03/30/90	2.75	742	1.9	ND	0.06
		IR09B028	9013Q166	03/30/90	5.25	496	1.9	ND	0.06
	073062	IR09B030	9013Q167	03/30/90	1.25	85.9	0.36	ND	0.05
		IR09B030	9013Q168	03/30/90	2.75	497	0.37	ND	0.06
		IR09B030	9013Q169	03/30/90	5.25	539	0.38	ND	0.06
	074059	PA33SS42	9310J386	03/10/93	1.85	382	0.41	ND	0.05
	076056	PA33SS59	9310J388	03/11/93	1.25	191	0.42	ND	0.05
	079055	PA50TA05	9324A057	06/18/93	7.75	75.5	0.38	ND	0.94
IR-33S	075064	IR09B032	9014H076	04/02/90	1.75	276	0.37	ND	0.05
		IR09B032	9014H077	04/02/90	2.75	372	0.38	ND	0.06
		IR09B032	9014H078	04/02/90	5.25	623	0.39	ND	0.06
		IR09B032	9014H079	04/02/90	9.75	371	0.39	ND	0.06
	075069	IR09B024	8939E044	09/28/89	1.25	555	0.62	ND	0.06
		IR09B024	8939E045	09/28/89	3.25	922	0.65	0.08	0.06
		IR09B024	8939E046	09/28/89	5.25	376	0.70	ND	0.06
		IR09B024	8939E047	09/28/89	10.75	412	0.74	ND	0.05
	075070	IR09MW35A	9015H091	04/10/90	1.25	546	0.38	ND	0.06
		IR09MW35A	9015H092	04/10/90	2.25	727	0.39	ND	0.06
		IR09MW35A	9015H093	04/10/90	5.25	569	0.39	ND	0.06
		IR09MW35A	9015H094	04/10/90	10.75	303	0.38	ND	0.06
		IR09MW35A	9015H095	04/10/90	14.75	338	0.37	ND	0.06
	081076	PA50B015	9330H504	07/26/93	8.25	346	0.70	ND	0.05
		PA50TA11	9327P231	07/07/93	6.25	228	0.39	ND	0.12
	082075	PA33MW37A	9309A641	03/02/93	3.75	104	0.70	ND	0.05

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a]
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[f] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-22	097059	Yes	No	0.170	IR22B012	9319A956	6.75	83.000	
	097061	Yes	No	0.160					
	097064	Yes	No	0.860					
	098052	No	No	ND	IR22B021 IR22B021A IR22B021A	9419R115 9419R117 9419R118	5.25 1.25 2.75	84.520 126.810 95.940	
	098056	Yes	No	0.320					
	098060	No	No	ND	PA45TA02	9322P221	4.75	55.710	
	098062	No	No	ND	PA45TA10	9322P223	4.45	35.700	
	098063	Yes	No	ND					
	099060	No	No	ND	IR51B033 IR51B033	9604J768 9604J769	0.50 4.50	87.500 49.500	
	109056	No	No	ND	IR51B032 IR51B032	9427R395 9427R396	1.75 6.75	33.970 92.020	
IR-32	097066	Yes	No	ND					
	097073	No	No	ND	IR70B006 IR70B006 PA55SS15	9534D060 9534D061 9319Q724	0.75 6.25 0.75	62.100 160.000 82.900	
	099069	Yes	No	ND	PA32B001	9308D067	9.25	27.330	
	101073	No	No	ND	IR70MW12A IR70MW12A	9538J251 9538J252	0.75 9.75	86.300 97.200	
	102073	No	No	ND	IR55B028 IR55B028 IR55B028 PA55SS02	9426R347 9426R348 9426R349 9310J384	1.75 3.75 6.25 0.75	80.630 92.920 115.800 113.890	
	106073	No	No	ND	IR55B020 IR55B020 IR55B020	9421L479 9421L480 9421L481	0.75 6.25 9.25	70.600 27.200 30.700	
	112068	Yes	No	ND					
	113067	Yes	No	ND	PA32B003	9308D059	4.25	112.160	
	113070	Yes	No	ND					

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a] HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[f] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-32	114068	Yes	No	ND					
IR-33N	070057	No	No	ND	IR33B078 IR33B078	9414A748 9414A749	1.75 5.75	49.400 47.200	
	071058	No	No	ND	IR33B065	9420C240	0.75	34.500	
	072057	No	No	ND	PA33SS43	9310J379	1.45	194.900	
	072058	No	No	ND	IR33B066 IR33B080 PA33SS47 PA33SS48	9420C237 9414A751 9310J370 9310J371	5.75 1.75 0.75 0.75	425.000 35.900 53.980 50.360	
	072059	No	No	ND	IR33B081 IR33B081	9427R393 9427R394	1.75 5.25	11.030 70.830	
	072061	Yes	No	ND					
	073053	No	No	13.416	IR33B105 IR33B105 IR33B105 IR33B106 IR33B106 IR33B106 IR33B107 IR33B107 IR33B107 PA33B060 PA33B060	9423R243 9423R244 9423R245 9423R240 9423R241 9423R242 9423R249 9423R250 9423R251 9309A683 9309A684	1.75 3.75 7.25 1.75 3.75 6.75 1.75 3.75 6.25 2.25 6.75	49.000 974.000 1720.000 * 1160.000 1270.000 * 31.100 1185.330 352.670 326.690 1340.000 586.000	13.416 * 9.906 *
	073057	No	No	ND	PA33SS46	9310J387	1.25	98.210	
	073058	No	No	ND	IR33B082 IR33B082	9427R390 9427R391	3.25 6.25	68.170 181.150	
	073059	No	No	ND	IR33B086 IR33B086	9413A718 9413A719	2.25 6.25	492.560 946.680	
	073062	Yes	No	ND					
	074053	No	No	ND	IR33B108 IR33B108 IR33B108 PA33SS11	9423R246 9423R247 9423R248 9308A620	1.75 3.75 6.25 0.00	904.780 369.120 1033.550 169.000	
	074054	No	No	ND	IR33B060A IR33B060A IR33B079	9419L442 9419L443 9434K050	2.25 6.25 1.75	335.850 994.400 264.150	

TABLE N.D-4
GROUNDWATER SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/L)	Total Chromium Detection Limit (mg/L)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-09	076065	IR33MW116A	9614Z023	04/04/96	0.00	ND	0.0007	ND	0.01
	077066	IR09P041A	9141X202	10/07/91	0.00	0.008	0.002	ND	0.01
		IR09P041A	9151X343	12/17/91	0.00	ND	0.003	ND	0.01
		IR09P041A	9345X076	11/10/93	0.00	ND	0.003	ND	0.02
		IR09P041A	9408X239	02/24/94	0.00	ND	0.002	ND	0.03
		IR09P041A	9419X270	05/09/94	0.00	ND	0.0009	ND	0.03
		IR09P041A	9419X271	05/09/94	0.00	ND	0.001	ND	0.02
		IR09P041A	9435E167	09/02/94	0.00	ND	0.0007	ND	0.04
IR-17	115087	IR17MW11A	9134X199	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW11A	9209X570	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X760	09/16/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X761	09/16/92	0.00	ND	0.003	ND	0.01
	119091	IR17MW12A	9134X198	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW12A	9209X568	02/27/92	0.00	ND	0.003	ND	0.01
		IR17MW12A	9238X770	09/17/92	0.00	ND	0.003	ND	0.01
	121088	IR17MW13A	9134X196	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9134X197	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9209X571	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9209X572	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9238X771	09/17/92	0.00	ND	0.003	ND	0.01
IR-22	092058	IR22MW08A	9318X989	05/06/93	0.00	ND	0.008	ND	0.01
		IR22MW08A	9336X027	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW08A	9402X169	01/13/94	0.00	ND	0.002	ND	0.02
	095060	IR22MW20A	9608J879	02/20/96	0.00	ND	0.0004	ND	0.01
	098056	IR22MW07A	9320P200	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9320P201	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9336X026	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW07A	9402X173	01/14/94	0.00	ND	0.002	ND	0.03
	098063	IR22MW16A	9318X993	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9318X994	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9336X029	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X171	01/14/94	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X172	01/14/94	0.00	ND	0.002	ND	0.03
IR-32	099069	PA50MW07A	9317X967	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9317X968	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9612W177	03/20/96	0.00	0.002	0.0004	ND	0.01
	114068	PA32MW04A	9308A630	02/26/93	0.00	ND	0.003	ND	0.01
		PA32MW04A	9308A631	02/26/93	0.00	ND	0.003	ND	0.01
IR-33N	079055	PA50MW11A	9317B102	04/27/93	0.00	ND	0.002	ND	0.01
IR-33S	075070	IR09MW35A	9017J001	04/25/90	0.00	0.09	0.002	0.06	0.01
		IR09MW35A	9017J002	04/25/90	0.00	0.10	0.002	0.06	0.01

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TABLE N.D-5
GROUNDWATER SAMPLES ANALYZED FOR CHROMIUM VI ONLY
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-09	067065	IR09MW51F	96152043	04/09/96	0.00	0.05	0.01
	069072	IR09MW52A	96152042	04/09/96	0.00	ND	0.01
	075070	IR09MW35A	9530X901	07/28/95	0.00	0.12	0.01
IR-16	110090	PA16MW16A PA16MW16A	9107X054 9107X055	02/12/91 02/12/91	0.00 0.00	ND ND	0.01 0.01
	112089	PA16MW18A PA16MW18A	9107X059 9107X060	02/14/91 02/14/91	0.00 0.00	ND ND	0.01 0.01
	112091	PA16MW17A	9107X057	02/12/91	0.00	ND	0.01
IR-32	099069	PA50MW07A	9618J072	05/01/96	0.00	ND	0.01
IR-33S	075070	IR09MW35A	9530X901	07/28/95	0.00	0.12	0.01
IR-37	067065	IR09MW51F	96152043	04/09/96	0.00	0.05	0.01
IR-53	110090	PA16MW16A PA16MW16A	9107X054 9107X055	02/12/91 02/12/91	0.00 0.00	ND ND	0.01 0.01
	112089	PA16MW18A PA16MW18A	9107X059 9107X060	02/14/91 02/14/91	0.00 0.00	ND ND	0.01 0.01
	112091	PA16MW17A	9107X057	02/12/91	0.00	ND	0.01

Notes:

bgs Below ground surface
mg/L Microgram per liter
ND Not detected

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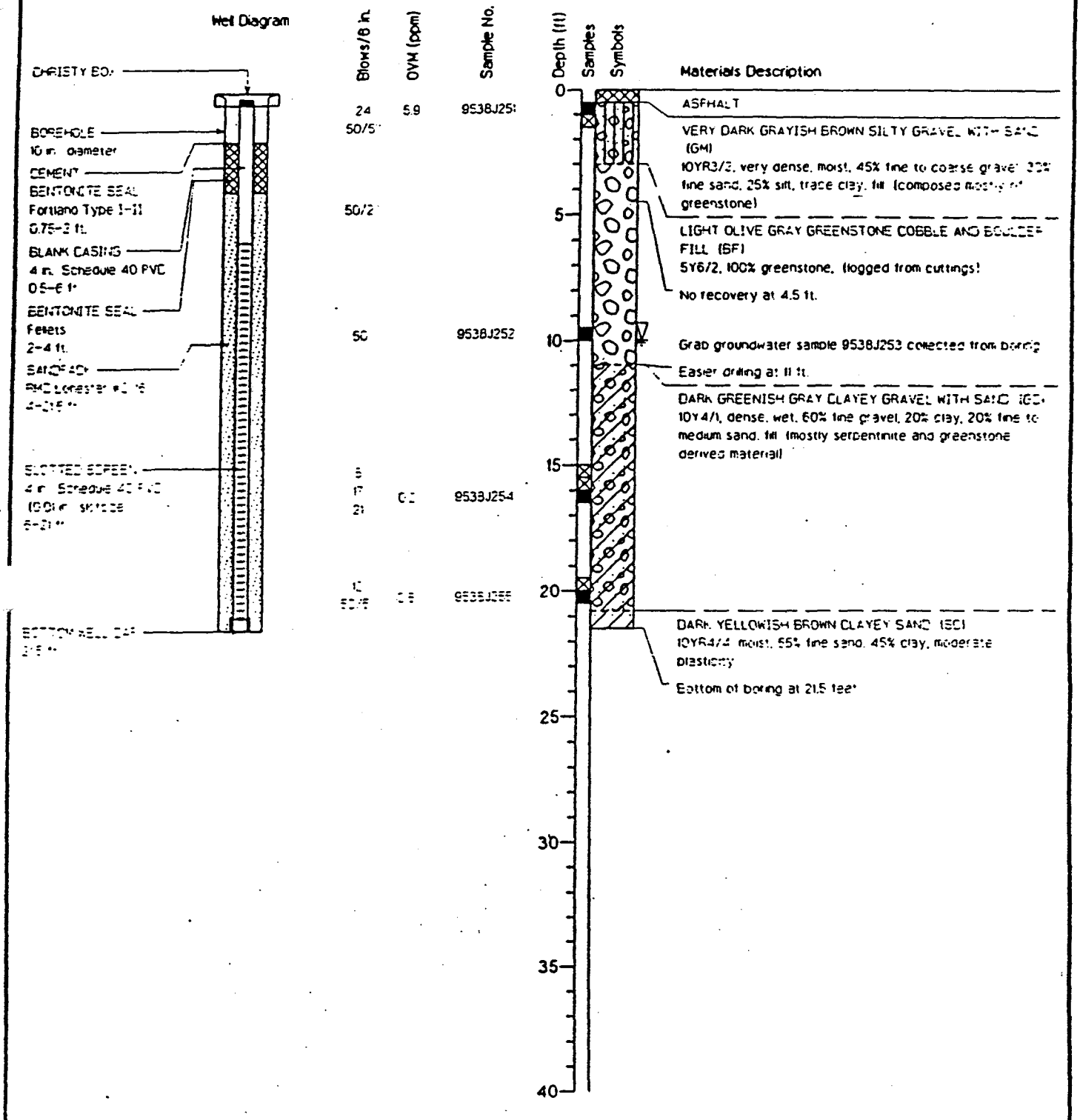
PRC Environmental Management, Inc.

LOG OF BORING IR70MW12A



Project Number	[illegible]	Date Drilled	9/15/95
Project Name	Parcel D-2 Report	GS Elevation	8.92 ft.
Project Task	Hunters Point Annex	First Encountered Wet Soil	10 ft.
Project Location	San Francisco, California	Total Depth Of Borehole	21.5 ft.
Equipment	Hollow Stem Auger (HSA) 10 in. diam.		

Figure

Log of Boring: PA32B003
Equipment: Drill Systems 1000 (ACH), 10 in. diam.
Elevation: GS 8.12 ft.
Date: 02/24/1993
Total Depth: 9.5 ft.

Blows/6"	OVA (ppm)	Sample Number	Depth (ft.)	Sample
12			0	
14				
8				
6	0	9308D058		
3				
2				
3	0	9308D059	5	
3				
2				
3				
4	0	9308D060		
6				
11				
11				
9				
6	0		10	

ASPHALT

DARK GRAY CLAYEY GRAVEL WITH SAND (GC)
5Y4/1, medium dense, moist,
70% fine to coarse subangular gravel, 15% clay,
15% fine- to coarse-grained sand, fill

DARK YELLOWISH BROWN CLAYEY GRAVEL (GC)
10YR4/4, loose to medium dense, moist,
70% fine to coarse subangular to angular gravel,
20% clay, 10% fine- to coarse-grained sand, fill

Wet at 6.5 ft.

DARK BROWN POORLY GRADED SAND (SP)
10YR3/3, loose to medium dense, wet,
90% fine-grained sand, 5% fine to medium subangular gravel, 5% fines, Undifferentiated Upper Sands .

Bottom of boring at 9.5 feet. Boring backfilled with bentonite cement grout (2/24/93).

PLATE

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring PA32B003
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 090403		11/93	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

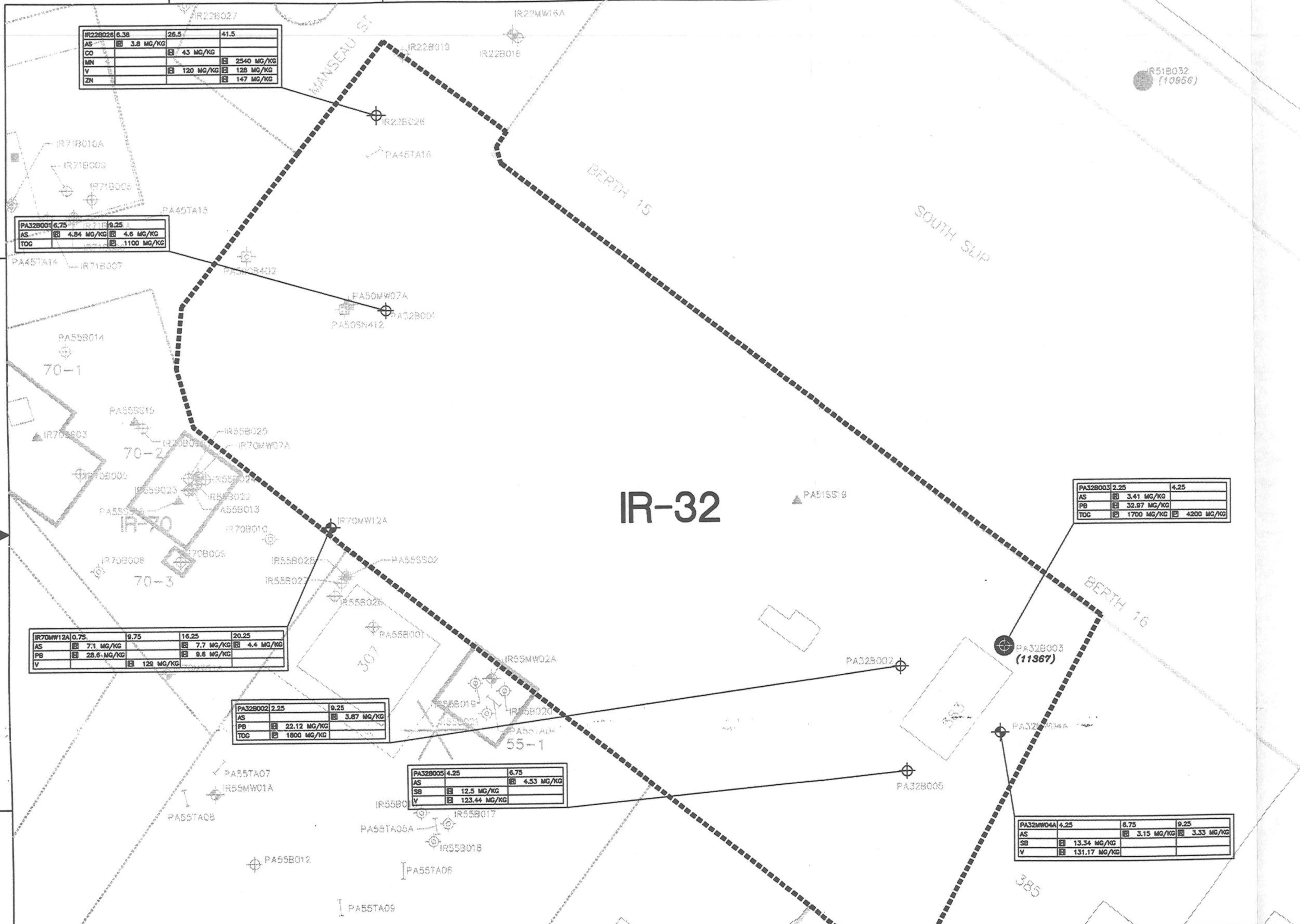
SYM NO.	SYM	DESCRIPTION
1		A–AQUIFER MONITORING WELL
2		B–AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A–AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17	D	FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25		CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND–AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A–AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

REV –
SH 1
DWG NO. 3220721

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.07–2 SHT 1 of 2
PARCEL D
IR–32 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3220721_.DWG



IR22B026	6.38	26.5	41.5
AS	3.8 MG/KG		
CO		43 MG/KG	
MN			2540 MG/KG
V		120 MG/KG	128 MG/KG
ZN			147 MG/KG

PA32B001	6.75	9.25
AS	4.84 MG/KG	4.6 MG/KG
TOG		1100 MG/KG

IR70MW12A	0.75	9.75	16.25	20.25
AS	7.1 MG/KG		7.7 MG/KG	4.4 MG/KG
PB	28.6 MG/KG		9.6 MG/KG	
V		129 MG/KG		

PA32B002	2.25	9.25
AS		3.87 MG/KG
PB	22.12 MG/KG	
TOG	1800 MG/KG	

PA32B005	4.25	6.75
AS		4.53 MG/KG
SB	12.5 MG/KG	
V	123.44 MG/KG	

PA32B003	2.25	4.25
AS	3.41 MG/KG	
PB	32.97 MG/KG	
TOG	1700 MG/KG	4200 MG/KG

PA32MW04A	4.25	6.75	9.25
AS		3.15 MG/KG	3.33 MG/KG
SB	13.34 MG/KG		
V	131.17 MG/KG		

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION

SOIL SAMPLE DEPTH (feet bgs)

ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (μg/kg).

- EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS HPAL
- EXCEEDS PETROLEUM SCREENING CRITERIA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.07 SHT 2 of 2
PARCEL D
IR-32 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 322072 SH 2 REV –

FILE NAME: 3220722_.DWG

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

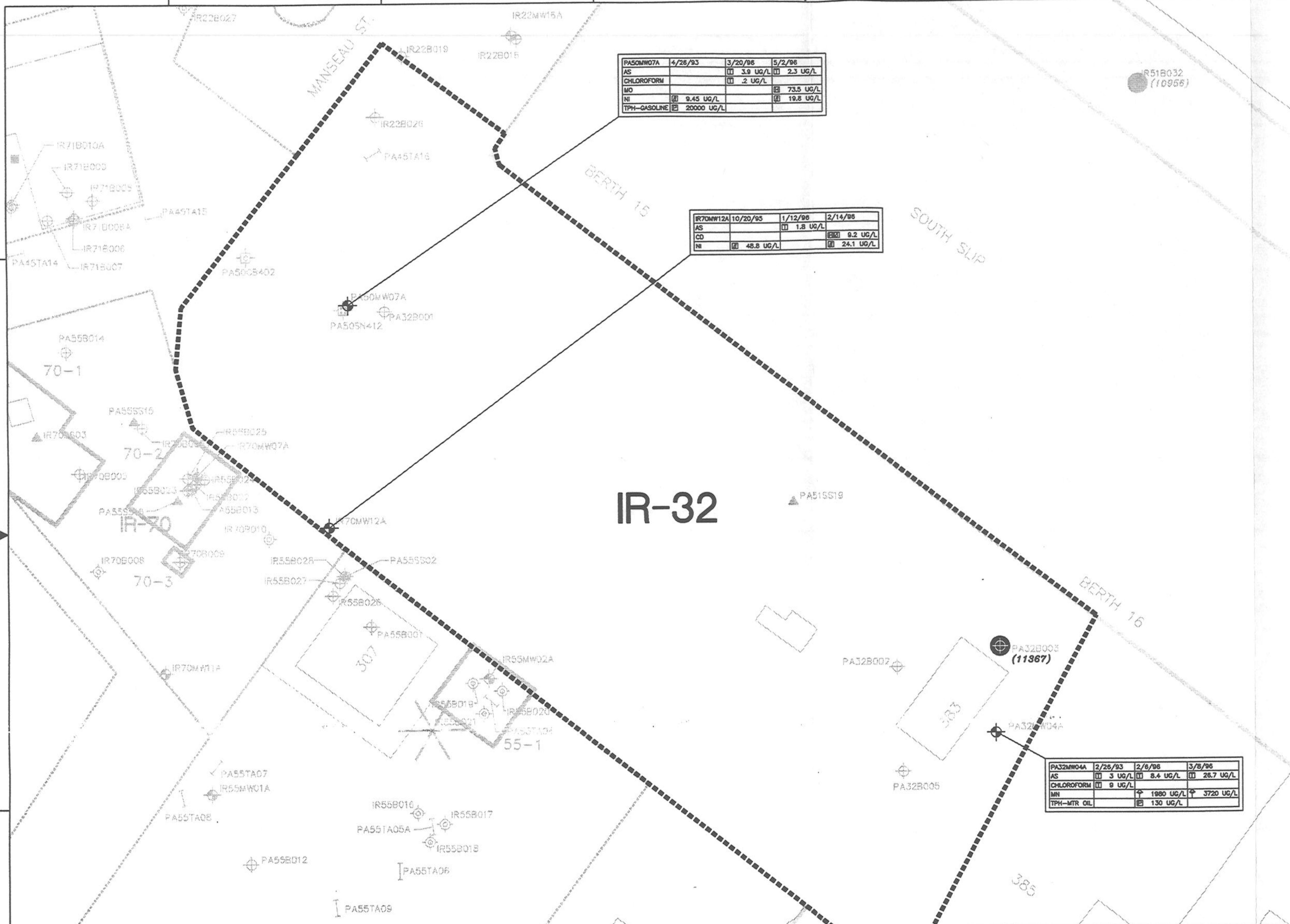
SYM NO.	SYM	DESCRIPTION
1		A-AQUIFER MONITORING WELL
2		B-AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A-AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17	D	FLOOR DRAIN
18		FLOOR VAULT
19	S	SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND-AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A-AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

DWG NO. 322073 SH 1 REV 1

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.07-3 SHT 1 of 2
PARCEL D
IR-32 GROUNDWATER RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3220731_.DWG



PA50MW07A	4/26/93	3/20/96	5/2/96
AS		[T] 3.9 UG/L	[T] 2.3 UG/L
CHLOROFORM		[T] .2 UG/L	
MO			[H] 73.5 UG/L
NI	[N] 9.45 UG/L		[N] 19.8 UG/L
TPH-GASOLINE	[P] 20000 UG/L		

IR70MW12A	10/20/95	1/12/96	2/14/96
AS		[T] 1.8 UG/L	
CD			[H][N] 9.2 UG/L
NI	[N] 48.8 UG/L		[N] 24.1 UG/L

PA32MW04A	2/26/93	2/6/96	3/8/96
AS	[T] 3 UG/L	[T] 8.4 UG/L	[T] 26.7 UG/L
CHLOROFORM	[T] 9 UG/L		
MN		↑ 1980 UG/L	↑ 3720 UG/L
TPH-MTR OIL		[P] 130 UG/L	

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
UST(S-136)	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
(9692)	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE THAT EITHER NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION → IR10MW28A | 6/15/92 ← DATE OF GROUNDWATER SAMPLE, G=GRAB, OR HYDROPUNCH SAMPLE DEPTH.

IR10MW28A	6/15/92
TCE	[T] 38 ug/kg
As	[T] 0.0028 ug/kg

ANALYTE

CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)

- [T] EXCEEDS CARCINOGENIC TAP WATER PRG
- ↑ EXCEEDS NON-CARCINOGENIC TAP WATER PRG
- [N] EXCEEDS NAWQC
- [M] EXCEEDS MCL
- [P] EXCEEDS PETROLEUM SCREENING CRITERIA
- [H] EXCEEDS HGAL

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.07-3 SHT 2 of 2

PARCEL D

IR-32 GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 322073 | SH 2 | REV —

FILE NAME: 3220732_.DWG

IR-33N

DRAFT FINAL
PARCEL D
RISK MANAGEMENT REVIEW PROCESS

DATED 20 JUNE 2000

LIST OF CONTENTS: IR-33N

SITE IR-33 NORTH: REMEDIAL AREA 33N-1 (GRID CELL AV20)

Operational History and Site Characterization

Remedial area 33N-1 is located south of Building 304, in an area of two former underground storage tanks (UST) (S-304 and S-305). Building 304 was formerly used by the Navy as an automobile service station. USTs S-304 and S-305 were 7,000-gallon tanks used to store gasoline; they were removed in August 1991. The two USTs were connected to two sets of dispenser pumps located on a concrete pad near Building 304. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (the City) is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area (the former UST locations). Based on a review of the data, the Navy believes that the area is adequately characterized for remedial investigation and feasibility study (RI/FS) purposes.

Data Evaluation and Risk Assessment

Remedial area 33N-1 is a 30- by 75-foot area located in grid cell AV20. Under an industrial reuse scenario, grid cell AV20 has an estimated excess lifetime cancer risk (ELCR) of 5×10^{-6} and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Because the ELCR exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AV20. Remedial area 33N-1 is associated with borings IR33MW61A, IR33B069, IR33B070, and IR33B091. Chemicals driving risk (benzo[a]pyrene, benzo[a]anthracene, and benzo[b]fluoranthene) were detected in borings IR33B069 and IR33B091. These chemicals are bounded spatially (with decreasing trends) by borings IR33B068, IR33B073, IR33B074, IR33B075, and IR33B076, as shown on Figure 1.

Remedial Area 33N-1 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.49 at 1.25 feet	4×10^{-6}	<1
Benzo(b)fluoranthene	0.34 at 1.25 feet	3×10^{-7}	<1
Benzo(a)anthracene	0.48 at 6.25 feet	4×10^{-7}	<1

Risk Management Factors

The maximum concentrations of benzo(a)anthracene and benzo(b)fluoranthene are below current screening criteria, while the maximum concentration of benzo(a)pyrene is above current screening criteria. The maximum concentration of benzo(a)pyrene (0.49 mg/kg) is above the 1995 and 1998 industrial preliminary remediation goal (PRG) (0.26 and 0.36 mg/kg, respectively). The maximum concentrations of benzo(a)anthracene (0.48 mg/kg) and benzo(b)fluoranthene (0.34 mg/kg) were less than the 1995 and 1998 industrial PRGs (2.6 and 3.6 mg/kg, respectively). The polycyclic aromatic hydrocarbons are associated with former USTs S-304 and S-305 and will be addressed in the Parcel D petroleum hydrocarbon corrective action plan (CAP). The ELCR of grid cell AV20 is within the acceptable risk range because the planned reuse of the site is consistent with the historical use of the site.

Groundwater Issues

At remedial area 33N-1, groundwater is encountered at about 7 to 12 feet below ground surface (bgs). The risk management review (RMR) did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

Total petroleum hydrocarbons (TPH) as diesel (TPH-d) was detected in soil at a maximum concentration of 2,800 mg/kg; TPH as motor oil (TPH-mo) was detected at a maximum concentration of 7,000 mg/kg; and total recoverable petroleum hydrocarbons (TRPH) were detected at a maximum concentration of 26,800 mg/kg. Two USTs (S-304 and S-305) were removed in August 1991.

Although it is not a chemical driving risk, benzene was detected in soil (0.003 mg/kg) and groundwater (650 micrograms per liter [µg/L]) in this remedial area. Benzene detected in the soil and the groundwater in remedial area 33N-1 is associated with former USTs S-304 and S-305.

During the RMR process, it was noted that a sump outside of Building 302A did contain levels of metals and polychlorinated biphenyls (PCB) that may act as a source for an environmental release. The Navy completed the cleanout of this sump and advanced a soil boring adjacent to this sump in May 2000. One

soil sample was collected approximately 6 inches below the bottom of this sump. The Navy intends on closing this sump. That closure will prevent any sediment and rainwater from accumulating in the sump.

Conclusions:

- ✓ The Navy recommends no Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response action for remedial area 33N-1.
- ✓ Total petroleum hydrocarbon, benzo(a)pyrene, and benzene detected in soil and groundwater will be addressed in the Parcel D petroleum hydrocarbon CAP.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33N	AV20, 5×10^{-6}	RA 33N-1

Operational History	Remedial area 33N-1 is located south of Building 304, in the area of two removed USTs (S-304 and S-305). The Navy used Building 304 as an automobile service station. USTs S-304 and S-305 were 7,000-gallon tanks used to store gasoline; they were removed in August 1991. The two USTs were connected to two sets of dispenser pumps located on a concrete pad near Building 304.
• Is the site adequately characterized?	Yes. This remedial area is associated with borings IR33MW61A, IR33B069, IR33B070, and IR33B091. Borings IR33B068, IR33B073, IR33B074, IR33B075, and IR33B076 bound this remedial area.
• Are the detected chemicals consistent with the operational history?	Yes. The source of PAHs may be related to the dispenser island and former USTs. Benzo(a)pyrene (4×10^{-6}) was detected at depths of 1.25 and 6.25 feet bgs in IR33B091 and IR33B069, respectively. Benzo(a)anthracene (4×10^{-7}) was detected at a depth of 6.25 feet in boring IR33B069. Benzo(b)fluoranthene (3×10^{-7}) was detected at depths of 1.25 and 6.25 feet bgs in boring IR33B069.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No hot spots exist for CERCLA substances. The USTs have been removed and clean fill was placed in the excavation. TPH constituents are present in soil and groundwater.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	Yes. Metals, benzene, and TPH constituents are present in groundwater.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	Yes. This remedial area is located at the former UST site.
• Has a potential source of the groundwater contamination been identified?	Yes. The sources of benzene and TPH constituents are related to the former USTs.

Has TPH been Detected over a Screening Criterion?	
• TPH as gasoline (TPH-g) > 100 parts per million (ppm)?	No.
• TPH-d > 1,000 ppm?	Yes. 2,800 mg/kg
• TPH-mo > 1,000 ppm?	Yes. 7,000 mg/kg
• TRPH > 1,000 ppm?	Yes. 26,800 mg/kg
• Total oil and grease > 1,000 ppm?	No.

Special Factors	
• Ecological Risk Present (Paved/Unpaved)?	No. The site is paved.
• PCBs greater than 10 ppm?	No. PCBs were not detected in soil or groundwater at this remedial area.
• Previous removal actions?	Yes. USTs were removed.
– Does this correspond with the distribution of the chemicals?	Yes.
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action for CERCLA substances is recommended for this site.
• Remedial action required?	No further action for CERCLA substances.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	Potentially.
• No further action recommended?	Yes.

NOTES:

The Navy recommends no CERCLA response action for remedial area 33N-1.

TPH in soil and groundwater contamination will be addressed in the Parcel D petroleum hydrocarbon CAP. .

SITE IR-33N: DE MINIMIS AREA 7353 (GRID CELL AT19)

Operational History and Site Characterization

De minimis area 7353 is located near the northeastern corner of Building 302. Building 302 was used as a transportation shop for the repair of automotive and locomotive equipment. Two aboveground waste oil storage tanks, with unknown total capacity, were located outside the northeastern corner of Building 302. The two aboveground waste oil tanks have been removed, but no additional information on their removal is available. As part of a 1996 interim action, an exploratory excavation (EE-12) was completed at de minimis area 7353. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area (the former location of aboveground storage tanks). Based on a review of the data, the Navy believes that the area is adequately characterized for RI/FS purposes.

Data Evaluation and Risk Assessment

De minimis area 7353 is an 8- by 8-foot area located in grid cell AT19 and associated with boring IR33B105 and surface sample PA33SS11. Surface sample PA33SS11 is physically located in grid cell AU19 (ELCR of 7×10^{-7}), but was associated with de minimis area 7353 during the feasibility study. Prior to the exploratory excavation, EE-12, grid cell AT19 had an ELCR of 1×10^{-6} and an HI less than 1 (under an industrial reuse scenario), and a lead concentration exceeding 1,000 mg/kg. The ELCR of grid cell AT19 is 1×10^{-6}, which is within an acceptable risk range and further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AT19. Lead was detected in surface sample PA33SS11. No specific analysis was conducted for chromium VI; however, a surrogate chromium VI concentration was calculated based on the detected concentration of total chromium in boring IR33B105 (1,720 mg/kg). The contaminated soil in the vicinity of borings IR33B105 and PA33SS11 was removed to a depth of 10 feet bgs as part of the exploratory excavation EE-12. The chemicals driving risk in grid cell AT19 were bounded spatially (with decreasing trends) by borings IR33B107, IR33B108, IR33B106, IR33B060A, and PA33B060, as shown on Figure 1.

De Minimis Area 7353 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Lead (removed by EE-12)	1,820 at 0 feet	NA	<1
Chromium VI (removed by EE-12)	13.4 at 7.25 feet (0.78% of total Cr)	1×10^{-6}	<1

Risk Management Factors

Contaminated soil driving risk in de minimis area 7353 was removed during the exploratory excavation (EE-12); supporting information on EE-12 is included in this appendix. Based on confirmation sampling results, the remaining concentrations of chemicals driving risk are below current screening criteria. Confirmation samples collected from EE-12 had lead concentrations ranging from 3.5 to 11.3 mg/kg, which are significantly less than the 1,000 mg/kg screening criteria. Detected concentrations of total chromium ranged from 28.2 to 1,230 mg/kg; these concentrations were less than their respective sample-specific Hunters Point ambient levels (HPAL) for total chromium, and were considered consistent with variations in ambient concentrations. In addition, there are no industrial sources of chromium VI at the site.

Groundwater Issues

No groundwater samples were collected near de minimis area 7353 due to shallow bedrock at 6 to 10 feet bgs. Within IR-33 North, groundwater is encountered at about 7 to 12 feet bgs. The RMR did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

TPH-mo was detected at a maximum concentration of 9,000 mg/kg, TRPH was detected at a maximum concentration of 22,500 mg/kg, and total oil and grease was detected at a maximum concentration of 17,000 mg/kg in soil. Contaminated soil containing these TPH constituents was removed during the exploratory excavation (EE-12).

Conclusions:

✓ The Navy concluded that no CERCLA response action is required for de minimis area 7353.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33N	AT19, 1×10^{-6}	DM 7353

Operational History	De minimis area 7353 is located near the northeastern corner of Building 302. Building 302 was used as a transportation shop for the repair of automotive and locomotive equipment. Two aboveground waste oil tanks were located outside the northeastern corner of Building 302 and have been removed. De minimis area 7353 was excavated as part of EE-12.
• Is the site adequately characterized?	Yes. De minimis area 7353 is associated with borings IR33B105 and PA33SS11. Borings IR33B107, IR33B108, IR33B106, IR33B060A, and PA33B060 bound this de minimis area.
• Are the detected chemicals consistent with the operational history?	Yes. Lead was detected in a surface sample from a stained area. The source of lead may be a result of operations at the transportation shop. No. Chromium was detected at a depth of 7.25 feet bgs in boring IR33B105. A surrogate chromium VI value (1×10^{-6}) was estimated based on the detected concentrations of total chromium. There are no industrial sources of chromium VI at the site; the chromium detected may be related to the serpentinite fill.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No. Chemicals driving risk were removed by EE-12.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	No groundwater samples have been collected close to these de minimis areas due to shallow bedrock at 6 to 10 feet bgs.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	N/A
• Has a potential source of the groundwater contamination been identified?	N/A

Has TPH been Detected over a Screening Criterion?	
• TPH-g > 100 ppm?	No.
• TPH-d > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	Yes. 9,000 mg/kg (removed by EE-12).
• TRPH > 1,000 ppm?	Yes. 22,500 mg/kg (removed by EE-12).
• Total oil and grease > 1,000 ppm?	Yes. 17,000 mg/kg (removed by EE-12).

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is paved.
• PCBs greater than 10 ppm?	No. PCBs were not detected at this de minimis area.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	Yes. EE-12.
– Does this correspond with the distribution of the chemicals?	Yes.

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site. EE-12 removed the chemicals of potential concern.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 7353.

SITE IR-33N: DE MINIMIS AREA 7560 (GRID CELL AU21)

Operational History and Site Characterization

De minimis area 7560 is located about 25 feet from the southwestern corner of Building 302A. The Navy used Building 302A as a transportation shop; activities included vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area. Based on a review of the data, the Navy believes that the area is adequately characterized for RI/FS purposes.

Data Evaluation and Risk Assessment

De minimis area 7560 is an 8- by 8-foot area located in grid cell AU21 associated with boring IR33B087. Under an industrial reuse scenario, grid cell AU21 has an estimated ELCR of 1×10^{-6} and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AU21. No specific analysis was conducted for the chemical driving risk (chromium VI); however, a surrogate chromium VI concentration was calculated based on the detected concentration of total chromium in boring IR33B087. This chemical is bounded spatially (with decreasing trends) by borings IR33MW65A, IR33B089, IR33B112, and IR33B086, as shown on Figure 1.

De Minimis Area 7560 Industrial Scenario Risk Driver

Area Risk Driver	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Chromium VI	11.7 at 1.25 feet (0.78% of total Cr)	1×10^{-6}	< 1

Risk Management Factors

The surrogate chromium VI concentration (11.7 mg/kg) was estimated from the detected total chromium concentration of 1,498 mg/kg (slightly above the sample-specific HPAL of 1,445 mg/kg) at boring IR33B087; however, there are no industrial sources of chromium VI at the site. The total chromium concentration was considered consistent with variations in ambient concentrations; chromium is a common component of serpentinite that appears in fill material across the installation. In addition, the surrogate chromium VI concentration is below the 1995 and 1998 industrial PRGs (230 and 64 mg/kg,

respectively). The ELCR of grid cell AU21 is within the acceptable risk range because the planned reuse of the site is consistent with the historical use of the site.

Groundwater Issues

At de minimis area 7560, groundwater is encountered at about 7 to 12 feet bgs. The RMR did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

TPH was not detected in soil at concentrations above screening criteria. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

✓ The Navy concluded that no CERCLA response action is required for de minimis area 7560.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33N	AU21, 1×10^{-6}	DM 7560

Operational History	De minimis area 7560 is located about 25 feet from the southwestern corner of Building 302A. The Navy used Building 302A as a transportation shop. Activities at this building include vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304.
• Is the site adequately characterized?	Yes. De minimis area 7560 is associated with boring IR33B087. Borings IR33B089, IR33MW65A, IR33B112, and IR33B086 bound this area.
• Are the detected chemicals consistent with the operational history?	No. The chromium detected may be related to the serpentine fill. The surrogate chromium VI concentration (11.7 mg/kg, 1×10^{-6}) was estimated from a detected total chromium concentration; however, there are no known industrial sources of chromium VI at the site.
• Does the distribution of the detected chemicals make sense?	No.

Are There Hot Spots Located in This Area?	No
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	Yes. TPH-d is present in groundwater at boring IR33B087. TPH-mo is present in surrounding borings.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	No. TPH-d and TPH-mo were not detected above screening criteria for this de minimis area, although TPH is present in nearby soils.
• Has a potential source of the groundwater contamination been identified?	No.

Has TPH been Detected over a Screening Criterion?	
• TPH-g > 100 ppm?	No.
• TPH-d > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is paved.
• PCBs greater than 10 ppm?	No. PCBs were not detected at this de minimis area.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 7560.

SITE IR-33N: DE MINIMIS AREA 7657 (GRID CELL AU20)

Operational History and Site Characterization

De minimis area 7657 is located near the southeastern corner of Building 302A. The Navy used Building 302A as a transportation shop. The activities at this building include vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304. An interconnected floor drain and sump are located inside Building 302A. The de minimis area is associated with a nearby sump and floor drains next to Building 302A. The sump drains to the storm drain system located in Cochrane Street. The sump located in front of Building 302A was cleaned out in May 2000. The material contained in the sump was contained, classified, and disposed according to Tetra Tech EM Inc.'s (TtEMI) "Program Waste Management Plan for Investigation-Derived Wastes" (PRC Environmental Management, Inc. [PRC] 1994). The exposed sump's steel liner, floor bottoms, and sides were inspected and no indications of equipment or facility failure (including cracks, fractures, or volume loss) were noted. The sump was clean and passed visual inspection at the completion of scheduled on-site activities. Once the clean-out activities were completed, the Navy advanced a boring (IR33B109) adjacent to the sump and collected a soil sample at a depth of 6 feet bgs. No additional investigation of underlying soils or groundwater is recommended. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted at the suspected source area. Based on a review of the data, the Navy believes that the area is adequately characterized for RI/FS purposes.

Data Evaluation and Risk Assessment

De minimis area 7657 is an 8- by 8-foot area located in grid cell AU20 and is associated with boring IR33B062. Under an industrial reuse scenario, grid cell AU20 has an estimated ELCR of 4×10^{-6} and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because these ELCR exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells AU20. Chemicals driving risk (arsenic and beryllium) at de minimis area 7657 were detected in boring IR33B062. These chemicals are

De Minimis Area 7657 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	24 at 2.25 feet	3×10^{-6}	<1
Beryllium	1.06 at 2.25 feet	3×10^{-7}	<1

bounded spatially (with decreasing trends) by borings IR33MW64A, PA33B018, IR33B063, PA33B013, IR33B064, and IR33B061, as shown on Figure 1.

Risk Management Factors

The maximum concentration of beryllium (1.06 mg/kg) is less than the 1995 and 1998 industrial PRGs (1.1 and 3,400 mg/kg). Arsenic was detected 19 times in grid cell AU20 but exceeded the HPAL (11.1 mg/kg) only once (24 mg/kg) in boring IR33B062. This maximum concentration of arsenic is consistent with variations in ambient concentrations. The ELCR of grid cell AU20 is within the acceptable risk range because the planned reuse of the site is consistent with the historical industrial use of the site.

As part of the data gap investigation, one additional boring (IR33B109) was advanced next to a sump located outside of Building 320A. Arsenic (3.7 mg/kg) is greater than the 1995 and the 1998 industrial PRG (2.0 mg/kg and 3.0 mg/kg, respectively), but is less than its HPAL (11.1 mg/kg). Barium, cobalt, lead, manganese, selenium, vanadium, and zinc did exceeded their respective HPALs but were less than their respective 1998 industrial PRGs.

Groundwater Issues

At de minimis area 7657, groundwater is encountered at about 7 to 12 feet bgs. Groundwater samples were not collected from de minimis area 7657. The RMR did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

TPH was not detected in soil at concentrations above screening criteria. No removal actions or exploratory excavations have been conducted in this area. The sump located in front of Building 302A was cleaned out in May 2000. Once the clean-out activities were completed, the Navy advanced a boring (IR33B109) adjacent to the sump and collected a soil sample at a depth of 6 feet bgs. The analytical results, daily field logs, and boring logs are located in this IR section.

Conclusions:

✓ The Navy concluded that no CERCLA response action is required for de minimis area 7657.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33N	AU20, 4×10^{-6}	DM 7657

Operational History	De minimis area 7657 is located near the southeastern corner of Building 302A. The Navy used Building 302A as a transportation shop. Activities included vehicle repair, sandblasting, and painting operations. Hydraulic lifts are located in Building 302A and between Buildings 302A and 304. An interconnected floor drain and sump are located inside and outside of Building 302A.
• Is the site adequately characterized?	Yes. De minimis area 7657 is associated with boring IR33B062. Borings IR33MW64A, PA33B018, IR33B063, PA33B013, IR33B064, and IR33B061 bound this de minimis area.
• Are the detected chemicals consistent with the operational history?	No. Arsenic (3×10^{-3}) was detected at depths ranging from 1.25 to 7.75 feet bgs. Beryllium (3×10^{-7}) was detected at depths ranging from 1.25 to 7.75 feet bgs. Arsenic and beryllium may be due to variations in ambient concentrations.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	Yes. Groundwater samples were not collected from boring IR33B062; however, volatile organic compounds (VOC) and TPH-mo were detected in groundwater from the surrounding area.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	No.
• Has a potential source of the groundwater contamination been identified?	Yes. A potential source may be releases from floor drains and a sump located inside of Building 302A.

Has TPH been Detected over a Screening Criterion?	
• TPH-g > 100 ppm?	No.
• TPH-d > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is paved.
• PCBs greater than 10 ppm?	No. PCBs were not detected at this de minimis area.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 7657.

The sump located in front of Building 302A was cleaned out in May 2000. Once the clean-out activities were completed, the Navy advanced a boring (IR33B109) adjacent to the sump and collected a soil sample at a depth of 6 feet bgs. The soil analytical results did not detect metals, VOCs, semivolatile organic compounds (SVOC), or pesticides/PCBs above PRG screening criteria.

IR-33N
DATA TABLE - SUMMARY OF HUMAN HEALTH RISK AT PARCEL D UNDER 10^{-6} FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO

DRAFT FINAL
PARCEL D
RISK MANAGEMENT REVIEW PROCESS

THE ABOVE IDENTIFIED DATA TABLE IS NOT AVAILABLE.

THIS DATA TABLE IS INCLUDED IN SECTIONS IR-32 AND IR-33S OF THIS DOCUMENT.

QUESTIONS MAY BE DIRECTED TO:

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(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-33N	AS20 (070057)	6E-06 (7E-07)	Arsenic (5E-06)	13	IR33B078	1.75	12.5	•,α
			Arsenic	--	IR33B078	5.75	10.5	•
			Benzo(a)pyrene (3E-07)	0.033	IR33B078	1.75	0.03	
			Benzo(b)fluoranthene (3E-08)	0.032	IR33B078	1.75	0.03	
			Benzo(b)fluoranthene	--	IR33B078	5.75	0.03	
			Chrysene (3E-09)	0.038	IR33B078	1.75	0.04	
			Chrysene	--	IR33B078	5.75	0.03	
IR-33N	AT19 (072054, 073053)	1E-06 (2E-07)	Chromium VI (1E-06)	13	NE	NE	NE	
			Benzene (6E-08)	0.054	IR33B107	3.75	0.1	
			Benzene	--	IR33B107	6.25	0.03	
			Benzene	--	IR33B105	7.25	0.02	
			Benzene	--	IR33B106	6.75	0.01	
			Chrysene (4E-08)	0.48	IR33B105	1.75	0.5	
			Chloroform (5E-09)	0.0050	IR33B106	1.75	0.005	
IR-33N	AT20 (071058, 072057, 072058, 073057, 073058)	8E-07 (1E-07)	Beryllium (5E-07)	0.51	PA33SS43	1.45	0.78	α
			Beryllium	--	PA33SS46	1.25	0.68	
			Beryllium	--	PA33SS47	0.75	0.37	
			Beryllium	--	IR33B082	6.25	0.35	
			Beryllium	--	PA33SS48	0.75	0.35	
			Beryllium	--	IR33B065	0.75	0.29	
			Beryllium	--	IR33B066	5.75	0.23	
			Benzo(a)pyrene (2E-07)	0.021	IR33B065	0.75	0.02	
			1,1-Dichloroethene (4E-08)	0.0034	PA33SS46	1.25	0.003	

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AT20 (071058, 072057, 072058, 073057, 073058) (Continued)	8E-07 (1E-07)	Benzo(b)fluoranthene (3E-08)	0.039	IR33B065	0.75	0.04
			Bis(2-ethylhexyl)phthalate (2E-08)	2.4	IR33B065	0.75	2
			Tetrachloroethene (2E-08)	0.11	PA33SS47	0.75	0.1
			Tetrachloroethene	--	IR33B080	1.75	0.04
			Tetrachloroethene	--	PA33SS46	1.25	0.02
			Chrysene (6E-09)	0.076	IR33B080	1.75	0.08
			Chrysene	--	IR33B066	5.75	0.03
			Trichloroethene (6E-10)	0.0063	PA33SS46	1.25	0.006
			Cadmium (4E-09)	4.7	IR33B082	3.25	4.7
			Cadmium	--	PA33SS47	0.75	1.1
			Cadmium	--	IR33B066	5.75	0.98
			Cadmium	--	IR33B080	1.75	0.90
			Cadmium	--	PA33SS48	0.75	0.66
			Cadmium	--	IR33B065	0.75	0.49
			Cadmium	--	IR33B082	6.25	0.040
			Carbazole (2E-10)	0.023	IR33B066	5.75	0.02
IR-33N (IR-09)	AT21 (072059, 072061, 073059, 073060)	2E-07 (6E-09)	Benzene (1E-07)	0.12	IR09B028	0.75	0.1
			Benzo(b)fluoranthene (4E-08)	0.045	IR09B028	0.75	0.05
			Tetrachloroethene (7E-10)	0.0050	IR33B081	1.75	0.005

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N (IR-09)	AT22 (071063, 072062, 072063, 072064, 073062)	6E-07 (1E-07)	Beryllium (5E-07)	0.60	IR09B027	0.75	0.99 α
			Beryllium	--	IR09B030	1.25	0.86 α
			Beryllium	--	IR09B030	2.75	0.55
			Beryllium	--	IR09B029	1.25	0.32
			Beryllium	--	IR09B029	2.75	0.25
			Beryllium	--	IR09B027	2.75	0.23
			Benzo(b)fluoranthene (4E-08)	0.044	IR09B027	5.25	0.04
			Benzo(a)anthracene (3E-08)	0.036	IR09B027	5.25	0.04
			Chrysene (3E-09)	0.037	IR09B027	5.25	0.04
IR-33N	AU19 (074053, 074054, 076054, 076055)	7E-07 (5E-08)	Benzo(a)pyrene (3E-07)	0.030	IR33B060B	6.25	0.03
			Aroclor-1260 (2E-07)	0.041	PA33SS11	0.00	0.04
			Chrysene (7E-08)	0.81	PA33SS11	0.00	0.8
			Chrysene	--	IR33B060B	6.25	0.06
			Chrysene	--	IR33B108	3.75	0.02
			Benzene (4E-08)	0.037	IR33B060B	6.25	0.04
			Benzene	--	IR33B108	6.25	0.007
			Benzo(a)anthracene (3E-08)	0.038	IR33B108	3.75	0.04
			Benzo(a)anthracene	--	IR33B060B	6.25	0.03
			Benzo(b)fluoranthene (2E-08)	0.025	IR33B060B	6.25	0.03
			Cadmium (1E-08)	13	PA33SS11	0.00	18.8 α
			Cadmium	--	IR33B079	6.25	1.6
			Cadmium	--	IR33B079	1.75	1.3
			Cadmium	--	IR33B060A	6.25	0.84

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-33N	AU19	7E-07	Cadmium	--	IR33B060B	6.25	0.66	
	(074053,	(5E-08)	Cadmium	--	IR33B060B	1.75	0.65	
	074054,		Cadmium	--	IR33B060A	2.25	0.57	
	076054,		Alpha-chlordane (9E-10)	0.0019	PA33SS11	0.00	0.002	
	076055)		Methylene chloride (7E-09)	0.083	IR33B060A	2.25	0.08	
	(Continued)		4,4'-DDE (4E-10)	0.0035	PA33SS11	0.00	0.004	
			Carbazole (4E-10)	0.034	IR33B060B	6.25	0.03	
			Aldrin (3E-09)	0.00046	IR33B079	1.75	0.0005	
			4,4'-DDT (2E-09)	0.018	PA33SS11	0.00	0.02	
IR-33N	AU20	4E-06	Arsenic (3E-06)	7.6	IR33B062	2.25	24.0	•,α
	(074057,	(6E-07)	Arsenic	--	IR50B022	5.75	10.0	•
	075056,		Arsenic	--	IR33B085	6.25	6.9	•
	075057,		Arsenic	--	IR33B083	1.25	6.2	•
	076056,		Arsenic	--	IR33B064	6.25	6.0	•
	076057,		Arsenic	--	IR33B063	1.75	5.5	•
	076058)		Arsenic	--	PA33SS59	1.25	4.8	•
			Arsenic	--	IR33B085	1.25	3.7	•
			Arsenic	--	IR33B062	7.75	3.2	•
			Arsenic	--	IR33B083	6.25	2.4	•
			Arsenic	--	IR50B022	1.75	2.3	•
			Arsenic	--	IR33B061	7.75	2.2	•
			Arsenic	--	IR33B063	6.25	2.1	•
			Arsenic	--	IR33B090	6.25	1.8	

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AU20	4E-06	Arsenic	--	IR33B090	1.75	1.3
	(074057,	(6E-07)	Arsenic	--	PA33B018	2.25	1.2
	075056,		Arsenic	--	PA33B018	6.75	1.1
	075057,		Arsenic	--	IR33B064	3.25	0.66
	076056,		Arsenic	--	IR33B061	2.75	0.55
	076057,		Beryllium (3E-07)	0.37	IR33B062	2.25	1.1
	076058)		Beryllium	--	PA33B018	6.75	0.70
	(Continued)		Beryllium	--	PA33SS59	1.25	0.59
			Beryllium	--	IR33B062	7.75	0.50
			Beryllium	--	IR33B090	6.25	0.48
			Beryllium	--	IR33B090	1.75	0.44
			Beryllium	--	IR33B061	7.75	0.38
			Beryllium	--	IR33B085	1.25	0.38
			Beryllium	--	IR50B022	5.75	0.37
			Beryllium	--	IR33B061	2.75	0.35
			Beryllium	--	IR33B085	6.25	0.34
			Beryllium	--	PA33B018	2.25	0.33
			Beryllium	--	IR33B089	6.25	0.28
			Beryllium	--	IR33B083	1.25	0.26
			Beryllium	--	IR33B083	6.25	0.22
			Beryllium	--	IR50B022	1.75	0.20
			Benzo(a)pyrene (3E-07)	0.033	IR50B022	5.75	0.03
			Benzo(b)fluoranthene (4E-08)	0.051	PA33B018	2.25	0.05

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AU20	4E-06	Benzo(a)anthracene (2E-08)	0.026	IR50B022	5.75	0.03
	(074057,	(6E-07)	Benzo(k)fluoranthene (2E-08)	0.021	IR33B083	1.25	0.02
	075056,		Nickel (1E-08)	240	IR33B085	1.25	632
	075057,		Nickel	--	IR33B083	1.25	579
	076056,		Nickel	--	IR33B090	1.75	318
	076057,		Nickel	--	PA33SS59	1.25	239
	076058)		Nickel	--	IR33B063	6.25	207
	(Continued)		Nickel	--	PA33B013	6.25	176
			Nickel	--	PA33B018	6.75	171
			Nickel	--	IR33B063	1.75	149
			Nickel	--	IR33B062	7.75	130
			Nickel	--	IR33B061	2.75	129
			Nickel	--	IR33B062	2.25	129
			Nickel	--	PA33B013	1.75	125
			Nickel	--	IR50B022	1.75	122
			Nickel	--	IR33B090	6.25	119
			Nickel	--	IR33B085	6.25	117
			Nickel	--	IR33B061	7.75	109
			Nickel	--	PA33B018	2.25	103
			Nickel	--	IR33B064	6.25	96.6
			Nickel	--	IR33B083	6.25	92.7
			Nickel	--	IR50B022	5.75	57.4
			Nickel	--	IR33B089	6.25	57.1

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AU20	4E-06	Nickel	--	IR33B089	1.25	52.9
	(074057,	(6E-07)	Nickel	--	IR33B064	3.25	24.9
	075056,		Heptachlor epoxide (5E-09)	0.0011	IR50B022	5.75	0.001
	075057,		Chloroform (4E-09)	0.0040	IR33B083	1.25	0.004
	076056,		Chrysene (3E-09)	0.041	IR50B022	5.75	0.04
	076057,		Chrysene	--	IR33B089	1.25	0.02
	076058)		4,4'-DDE (3E-10)	0.0026	IR50B022	5.75	0.003
	(Continued)		Gamma-chlordane (2E-10)	0.00052	IR33B090	1.75	0.0005
			Benzene (2E-09)	0.0020	IR33B083	1.25	0.002
			Trichloroethene (2E-10)	0.0020	IR33B089	1.25	0.002
			Bis(2-ethylhexyl)phthalate (1E-10)	0.017	IR33B061	7.75	0.02
			Tetrachloroethene (1E-09)	0.0075	PA33B013	6.25	0.008
			Tetrachloroethene	--	IR50B022	5.75	0.001
IR-33N (IR-33S)	AU21 (074059, 075060, 076059)	1E-06 (9E-08)	Chromium VI (1E-06)	12	NE	NE	NE
IR-33N	AU22	4E-07	Beryllium (4E-07)	0.39	IR09B032	2.75	0.72 α
(IR-09,	(074064,	(6E-08)	Beryllium	--	IR09B032	1.75	0.60
IR-33S)	075063,		Beryllium	--	IR09B032	9.75	0.53
	075064,		Beryllium	--	PA33B040	2.25	0.44
	076063,		Beryllium	--	PA33B040	6.75	0.43
	076064)		Beryllium	--	PA33B039	6.75	0.25

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N (IR-09, IR-33S)	AU22 (074064, 075063, 075064, 076063, 076064) (Continued)	4E-07 (6E-08)	Beryllium	--	PA33B039	2.25	0.22
			Beryllium	--	IR33B067	6.25	0.11
			Benzo(b)fluoranthene (3E-08)	0.039	IR09B032	1.75	0.04
IR-33N	AV19 (077055, 078055, 079055)	2E-09 (2E-10)	Nickel (2E-09)	37	PA50TA05	7.75	36.7
IR-33N	AV20 (077056, 077057, 077058, 078056, 078057, 078058)	5E-06 (3E-07)	Benzo(a)pyrene (4E-06)	0.49	IR33B091	1.25	0.5
			Benzo(a)pyrene	--	IR33B069	6.25	0.3
			Benzo(a)anthracene (4E-07)	0.48	IR33B069	6.25	0.5
			Benzo(b)fluoranthene (3E-07)	0.34	IR33B091	1.25	0.3
			Benzo(b)fluoranthene	--	IR33B069	6.25	0.2
			Benzo(k)fluoranthene (2E-07)	0.29	IR33B069	6.25	0.3
			Indeno(1,2,3-cd)pyrene (1E-07)	0.14	IR33B069	6.25	0.1
			Chrysene (9E-08)	1.1	IR33B091	1.25	1
			Chrysene	--	IR33B069	6.25	0.6
			Alpha-chlordane (6E-09)	0.013	IR33B069	6.25	0.01
			Aldrin (5E-09)	0.00087	IR33B069	6.25	0.0009
			Tetrachloroethene (4E-10)	0.0030	IR33B069	6.25	0.003

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AV20 (077056, 077057, 077058, 078056, 078057, 078058) (Continued)	5E-06 (3E-07)	Tetrachloroethene	--	IR33B068	5.75	0.001
			Heptachlor (4E-09)	0.0018	IR33B069	6.25	0.002
			4,4'-DDE (3E-10)	0.0028	IR33B069	6.25	0.003
			Benzene (3E-09)	0.0030	IR33B091	1.25	0.003
			Gamma-chlordane (3E-09)	0.0060	IR33B069	6.25	0.006
			4,4'-DDT (2E-10)	0.0021	IR33B068	5.75	0.002
IR-33N (IR-34)	AV21 (079061)	5E-10 (7E-11)	4,4'-DDT (5E-11)	0.00043	PA34B006	6.75	0.0001
			4,4'-DDT	--	PA34B006	2.25	0.0004
			Heptachlor (5E-10)	0.00023	PA34B006	2.25	0.0002
IR-33N (IR-34, IR-35)	AW20 (080058, 081058, 082058)	4E-06 (3E-07)	Benzo(a)pyrene (2E-06)	0.27	IR34B023	1.25	0.3
			Benzo(a)anthracene (6E-07)	0.69	IR34B023	1.25	0.7
			Dibenz(a,h)anthracene (4E-07)	0.084	IR34B023	1.25	0.08
			Benzo(b)fluoranthene (4E-07)	0.44	IR34B023	1.25	0.4
			Benzo(k)fluoranthene (3E-07)	0.33	IR34B023	1.25	0.3
			Indeno(1,2,3-cd)pyrene (1E-07)	0.17	IR34B023	1.25	0.2
			Chrysene (5E-08)	0.60	IR34B023	1.25	0.6
			Chrysene	--	IR34B022	1.75	0.07
			Carbazole (6E-10)	0.060	IR34B023	1.25	0.06
			Bis(2-ethylhexyl)phthalate (3E-09)	0.40	IR34B029	6.25	0.4
			Bis(2-ethylhexyl)phthalate	--	IR34B029	1.25	0.08

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

HI	Hazard Index
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
NC	Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.
NE	Not evaluated
a	The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.
d	The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.
e	Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME
f	The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.
g	If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.
h	Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).
i	The central nervous sysstem is the primary system affected by the indicated chemical, generally at the lowest dose levels.
j	Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.
k	Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.
l	The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.
m	The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
n	The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
o	The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
p	The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
q	The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
*	The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).
α	The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N	AS20 (070057)	6×10^{-6} (7×10^{-7})	<1	Arsenic (5×10^{-6}) Arsenic Benzo(a)pyrene (3×10^{-7})	13 -- 0.033	IR33B078 IR33B078 IR33B078	1.75 5.75 1.75	13 α, # 11 # 0.03
IR-33N	AT19 (072054, 073053)	1×10^{-6} (2×10^{-7})	<1	Chromium VI (1×10^{-6})	13 [i]	IR33B105 [i]	7.25	1,720
IR-33N	AT20 (071058, 072057, 072058, 073057, 073058)	8×10^{-7} (1×10^{-7})	<1	NE	NE	NE	NE	NE
IR-33N (IR-09)	AT21 (072059, 072061, 073059, 073060)	2×10^{-7} (6×10^{-8})	<1	NE	NE	NE.	NE	NE
IR-33N (IR-09)	AT22 (071063, 072062, 072063, 072064, 073062)	6×10^{-7} (1×10^{-7})	<1	NE	NE	NE	NE	NE
IR-33N	AU19 (074053, 074054, 076054, 076055)	7×10^{-7} (5×10^{-8})	<1	Lead	7.6	PA33SS11	0.00	1,800 α, #
IR-33N	AU20 (074057, 075056, 075057, 076056, 076057, 076058)	4×10^{-6} (6×10^{-7})	<1	Arsenic (3×10^{-6}) Benzo(a)pyrene (3×10^{-7}) Beryllium (3×10^{-7})	7.6 0.033 0.37	IR33B062 IR50B022 IR33B062	2.25 5.75 2.25	24 α, # 0.03 1.1 α, #

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N (IR-33S)	AU21 (074059, 075060, 076059)	1×10^{-6} (9×10^{-8})	<1	Chromium VI (1×10^{-6})	12 [i]	IR33B087 [i]	1.25	1,500
IR-33N (IR-09, IR-33S)	AU22 (074064, 075063, 075064, 076063, 076064)	4×10^{-7} (6×10^{-8})	<1	NE	NE	NE	NE	NE
IR-33N	AV19 (077055, 078055, 079055)	2×10^{-9} (2×10^{-10})	<1	NE	NE	NE	NE	NE
IR-33N	AV20 (077056, 077057, 077058, 078056, 078057, 78058)	5×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (4×10^{-6}) Benzo(a)pyrene Benzo(a)anthracene (4×10^{-7}) Benzo(b)fluoranthene (3×10^{-7}) Benzo(b)fluoranthene	0.49 -- 0.48 0.34 --	IR33B091 IR33B069 IR33B069 IR33B091 IR33B069	1.25 6.25 6.25 1.25 6.25	0.49 # 0.33 # 0.48 0.34 0.23
IR-33N (IR-34)	AV21 (079061)	5×10^{-10} (7×10^{-11})	<1	NE	NE	NE	NE	NE
IR-33N (IR-34, IR-35)	AW20 (080058, 081058, 082058)	4×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (2×10^{-6}) Benzo(a)anthracene (6×10^{-7}) Benzo(b)fluoranthene (4×10^{-7}) Dibenzo(a,h)anthracene (4×10^{-7}) Benzo(k)fluoranthene (3×10^{-7})	0.27 0.69 0.44 0.084 0.33	IR34B023 IR34B023 IR34B023 IR34B023 IR34B023	1.25 1.25 1.25 1.25 1.25	0.27 # 0.69 0.44 0.084 0.33
IR-33S (IR-33N)	AU21 (074059, 075060, 076059)	1×10^{-6} (9×10^{-8})	<1	Chromium VI (1×10^{-6})	12 [i]	IR33B087 [i]	1.25	1,500

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Notes:

bgs	Below ground surface
COPC	Chemical of potential concern
ELCR	Excess lifetime cancer risk
EPC	Exposure point concentration
HI	Hazard index
mg/kg	Milligram per kilogram
NC	Not calculated; no carcinogenic COPCs identified in this exposure area; therefore, total segregated HI not calculated
NE	Not evaluated
#	Detected concentration exceeds U.S. Environmental Protection Agency (EPA) Region IX preliminary remediation goal (PRG) for industrial soil
α	Detected concentration exceeds Hunters Point ambient level (HPAL)

a	The number presented in parentheses is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The number presented in parentheses is the associated exposure area for the residential scenario based on a 2,500-square foot exposure area. The total ELCRs for the residential scenario are presented in Table N.5-9, and the total HIs for the residential scenario are presented in Table N.5-10.
d	The total ELCR presented is for the RME case. The value presented in parentheses is for the average exposure case. The total ELCR evaluates the ingestion of, dermal contact with, and inhalation of volatile organic compounds (VOC) and particulate emissions from the soil exposure pathway.
e	The total HIs for the industrial scenario are presented in Table N.I-1 of Attachment N-I.
f	Only the COPC-specific ELCRs for COPCs contributing about 90 percent of the total ELCRs that exceed 1×10^{-4}, COPCs contributing a risk exceeding 1×10^{-6} under the RME case, or lead concentrations exceeding 1,000 mg/kg are listed.
g	The value presented is the EPC assumed for the COPCs contributing significantly to the total ELCR under the RME case.
h	If the COPC-specific total ELCR exceeding 1×10^{-6} can be attributed to one or several sampling locations, the sampling location, depth, and concentration are listed.
i	Chromium VI was not speciated; therefore, for all IR-sites except IR-36S, a surrogate chromium VI value was calculated assuming 0.78 percent of the total chromium value (see Attachment N-C). For IR-36S, a surrogate chromium VI value was calculated assuming 3.3 percent of the total chromium value.

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TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-32	099069	PA32B001	93080065	02/25/93	4.25	72.4	0.38	ND	0.05
		PA32B001	93080066	02/25/93	6.75	23.1	0.38	ND	0.05
	112068	PA32B002	93080061	02/24/93	2.25	70.7	0.39	ND	0.05
		PA32B002	93080062	02/24/93	4.25	61.9	0.40	ND	0.05
		PA32B002	93080063	02/24/93	9.25	28.5	0.43	ND	0.05
	113067	PA32B003	93080058	02/24/93	2.25	80.1	0.39	ND	0.05
		PA32B003	93080060	02/24/93	6.75	77.4	0.40	ND	0.05
	113070	PA32B005	93080055	02/24/93	2.25	58.9	0.37	ND	0.05
		PA32B005	93080056	02/24/93	4.25	123	0.41	ND	0.05
		PA32B005	93080057	02/24/93	6.75	21.0	0.43	ND	0.05
	114068	PA32MW04A	93080051	02/24/93	2.25	94.1	0.40	ND	0.05
		PA32MW04A	93080052	02/24/93	4.25	152	0.40	ND	0.05
		PA32MW04A	93080053	02/24/93	6.75	27.3	0.40	ND	0.05
		PA32MW04A	93080054	02/24/93	9.25	28.6	0.41	ND	0.05
IR-33N	072061	IR09B028	9013Q164	03/30/90	0.75	205	1.9	ND	0.06
		IR09B028	9013Q165	03/30/90	2.75	742	1.9	ND	0.06
		IR09B028	9013Q166	03/30/90	5.25	496	1.9	ND	0.06
	073062	IR09B030	9013Q167	03/30/90	1.25	85.9	0.36	ND	0.05
		IR09B030	9013Q168	03/30/90	2.75	497	0.37	ND	0.06
		IR09B030	9013Q169	03/30/90	5.25	539	0.38	ND	0.06
	074059	PA33SB42	9310J386	03/10/93	1.85	382	0.41	ND	0.05
	076056	PA33SB59	9310J388	03/11/93	1.25	191	0.42	ND	0.05
	079055	PA50TA05	9324A057	06/18/93	7.75	75.5	0.38	ND	0.94
IR-33S	075064	IR09B032	9014H076	04/02/90	1.75	276	0.37	ND	0.05
		IR09B032	9014H077	04/02/90	2.75	372	0.38	ND	0.06
		IR09B032	9014H078	04/02/90	5.25	623	0.39	ND	0.06
		IR09B032	9014H079	04/02/90	9.75	371	0.39	ND	0.06
	075069	IR09B024	8939E044	09/28/89	1.25	555	0.62	ND	0.06
		IR09B024	8939E045	09/28/89	3.25	922	0.65	0.08	0.06
		IR09B024	8939E046	09/28/89	5.25	376	0.70	ND	0.06
		IR09B024	8939E047	09/28/89	10.75	412	0.74	ND	0.05
	075070	IR09MW35A	9015H091	04/10/90	1.25	546	0.38	ND	0.06
		IR09MW35A	9015H092	04/10/90	2.25	727	0.39	ND	0.06
		IR09MW35A	9015H093	04/10/90	5.25	569	0.39	ND	0.06
		IR09MW35A	9015H094	04/10/90	10.75	303	0.38	ND	0.06
		IR09MW35A	9015H095	04/10/90	14.75	338	0.37	ND	0.06
	081076	PA50B018	9330H504	07/26/93	8.25	346	0.70	ND	0.05
		PA50TA11	9327P231	07/07/93	6.25	228	0.39	ND	0.12
	082075	PA33MW37A	9309A641	03/02/93	3.75	104	0.70	ND	0.05

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TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a]
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[a]				Surrogate Chromium VI Value[e] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-32	114068	Yes	No	ND					
IR-33N	070057	No	No	ND	IR33B078	9414A748	1.75	49.400	
					IR33B078	9414A749	5.75	47.200	
	071058	No	No	ND	IR33B065	9420C240	0.75	34.500	
	072057	No	No	ND	PA33SS43	9310J379	1.45	194.900	
	072058	No	No	ND	IR33B066	9420C237	5.75	425.000	
					IR33B080	9414A751	1.75	35.900	
					PA33SS47	9310J370	0.75	53.980	
					PA33SS48	9310J371	0.75	50.360	
	072059	No	No	ND	IR33B081	9427R393	1.75	11.030	
					IR33B081	9427R394	5.25	70.830	
	072061	Yes	No	ND					
	073053	No	No	13.416	IR33B105	9423R243	1.75	49.000	
					IR33B105	9423R244	3.75	974.000	
					IR33B105	9423R245	7.25	1720.000 *	13.416 *
					IR33B106	9423R240	1.75	1160.000	
					IR33B106	9423R241	3.75	1270.000 *	9.906 *
					IR33B106	9423R242	6.75	31.100	
					IR33B107	9423R249	1.75	1185.330	
					IR33B107	9423R250	3.75	352.670	
					IR33B107	9423R251	6.25	326.690	
					PA33B060	9309A683	2.25	1340.000	
					PA33B060	9309A684	6.75	586.000	
	073057	No	No	ND	PA33SS46	9310J387	1.25	98.230	
	073058	No	No	ND	IR33B082	9427R390	3.25	68.170	
					IR33B082	9427R391	6.25	181.150	
	073059	No	No	ND	IR33B086	9413A718	2.25	492.560	
					IR33B086	9413A719	6.25	946.680	
	073062	Yes	No	ND					
	074053	No	No	ND	IR33B108	9423R246	1.75	904.780	
					IR33B108	9423R247	3.75	369.120	
					IR33B108	9423R248	6.25	1033.550	
					PA33SS11	9308A620	0.00	169.000	
	074054	No	No	ND	IR33B060A	9419L442	2.25	335.850	
					IR33B060A	9419L443	6.25	994.400	
					IR33B079	9434K050	1.75	264.150	

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a]
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[g] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-33N	074054				IR33B079	9434K051	6.25	988.500	
	074057	No	No	ND	IR33B083	9413L176	1.25	286.000	
					IR33B083	9413L177	6.25	112.000	
	074059	Yes	No	ND					
	075056	No	No	ND	IR50B022	9422R216	1.75	133.000	
					IR50B022	9422R217	5.75	40.900	
	075057	No	No	ND	IR33B064	9420C232	3.25	29.700	
					IR33B064	9420C233	6.25	110.000	
	075060	No	No	11.687	IR33B087	9413L193	1.25	1498.380 *	11.687 *
					IR33B087	9413L194	6.25	817.970	
	076055	No	No	ND	IR33B060B	9423R229	1.75	343.000	
					IR33B060B	9423R230	6.25	483.000	
	076056	Yes	No	ND	IR33B085	9413L183	1.25	522.890	
					IR33B085	9413L184	6.25	63.350	
	076057	No	No	ND	IR33B061	9415A789	2.75	112.350	
					IR33B061	9415A790	7.75	77.280	
					IR33B062	9414H569	2.25	18.030	
					IR33B062	9414H570	7.75	116.610	
					IR33B063	9414H565	1.75	182.510	
					IR33B063	9414H566	6.25	141.640	
					IR33B090	9431R494	1.75	273.610	
					IR33B090	9431R495	6.25	126.770	
					PA33B013	9313N182	1.75	112.900	
					PA33B013	9313N183	6.25	125.770	
					PA33B018	9309A651	2.25	190.000	
					PA33B018	9309A652	6.75	127.000	
	076058	No	No	ND	IR33B089	9413L163	1.25	58.900	
					IR33B089	9413L164	6.25	73.200	
	077056	No	No	ND	IR33B068	9419L432	5.75	41.200	
					IR33B069	9419L438	6.25	57.800	
					IR33B070	9415C127	6.25	186.000	
	077057	No	No	ND	IR33B091	9413L170	1.25	33.200	
					IR33B091	9413L171	6.25	111.000	
	079055	Yes	No	ND					
IR-33S	075063	No	No	ND	IR33B118	9543W088	0.50	395.000	
					IR33B118	9543W089	5.75	451.000	

TABLE N.D-4
GROUNDWATER SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/L)	Total Chromium Detection Limit (mg/L)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-09	076065	IR33MW116A	96142025	04/04/96	0.00	ND	0.0007	ND	0.01
	077066	IR09P041A	9141X202	10/07/91	0.00	0.008	0.002	ND	0.01
		IR09P041A	9151X343	12/17/91	0.00	ND	0.003	ND	0.01
		IR09P041A	9345X076	11/10/93	0.00	ND	0.003	ND	0.02
		IR09P041A	9408X239	02/24/94	0.00	ND	0.002	ND	0.03
		IR09P041A	9419X270	05/09/94	0.00	ND	0.0009	ND	0.03
		IR09P041A	9419X271	05/09/94	0.00	ND	0.001	ND	0.02
		IR09P041A	9435E167	09/02/94	0.00	ND	0.0007	ND	0.04
IR-17	115087	IR17MW11A	9134X199	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW11A	9209X570	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X760	09/16/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X761	09/16/92	0.00	ND	0.003	ND	0.01
	119091	IR17MW12A	9134X198	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW12A	9209X568	02/27/92	0.00	ND	0.003	ND	0.01
		IR17MW12A	9238X770	09/17/92	0.00	ND	0.003	ND	0.01
	121088	IR17MW13A	9134X196	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9134X197	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9209X571	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9209X572	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9238X771	09/17/92	0.00	ND	0.003	ND	0.01
IR-22	092058	IR22MW08A	9318X989	05/06/93	0.00	ND	0.008	ND	0.01
		IR22MW08A	9336X027	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW08A	9402X169	01/13/94	0.00	ND	0.002	ND	0.02
	095060	IR22MW20A	9608J879	02/20/96	0.00	ND	0.0004	ND	0.01
	098056	IR22MW07A	9320P200	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9320P201	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9336X026	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW07A	9402X173	01/14/94	0.00	ND	0.002	ND	0.03
	098063	IR22MW16A	9318X993	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9318X994	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9336X029	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X171	01/14/94	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X172	01/14/94	0.00	ND	0.002	ND	0.03
IR-32	099069	PA50MW07A	9317X967	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9317X968	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9612W177	03/20/96	0.00	0.002	0.0004	ND	0.01
	114068	PA32MW04A	9308A630	02/26/93	0.00	ND	0.003	ND	0.01
		PA32MW04A	9308A631	02/26/93	0.00	ND	0.003	ND	0.01
IR-33N	079055	PA50MW11A	9317B102	04/27/93	0.00	ND	0.002	ND	0.01
IR-33S	075070	IR09MW35A	9017J001	04/25/90	0.00	0.09	0.002	0.06	0.01
		IR09MW35A	9017J002	04/25/90	0.00	0.10	0.002	0.06	0.01

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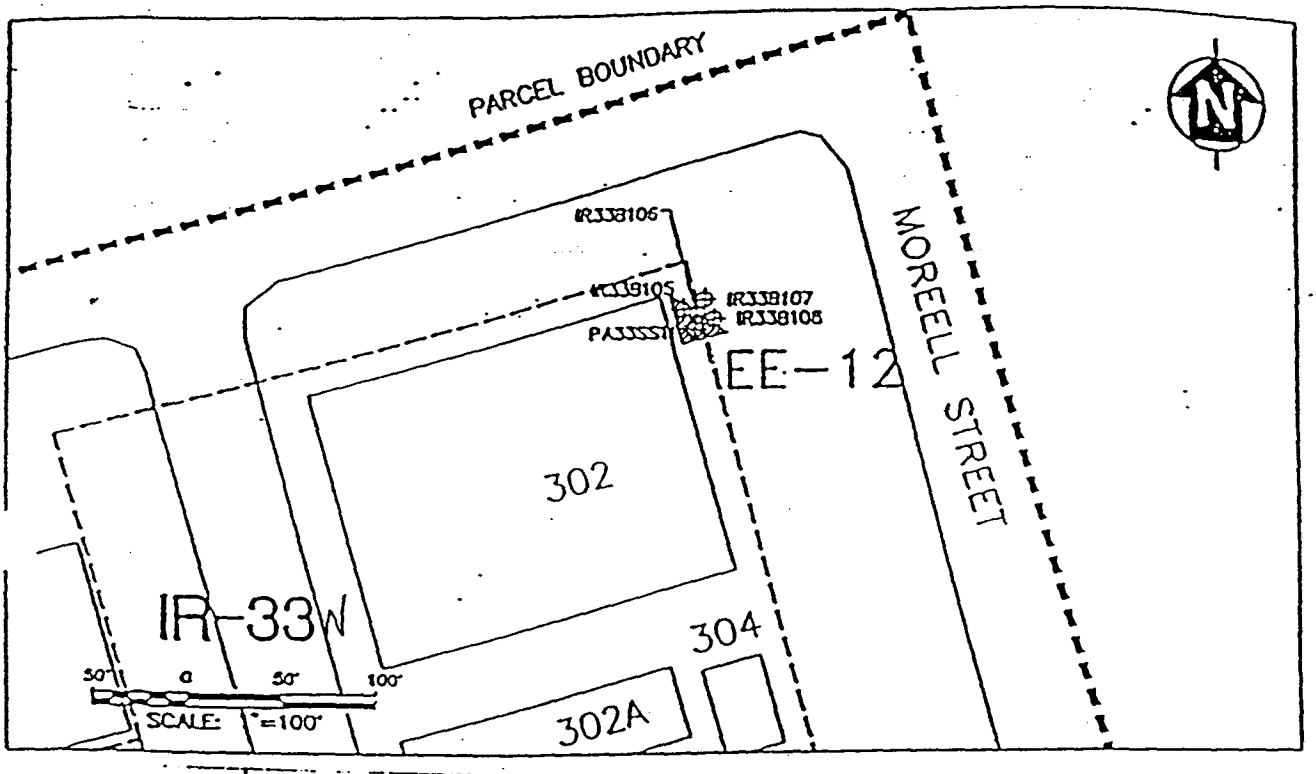
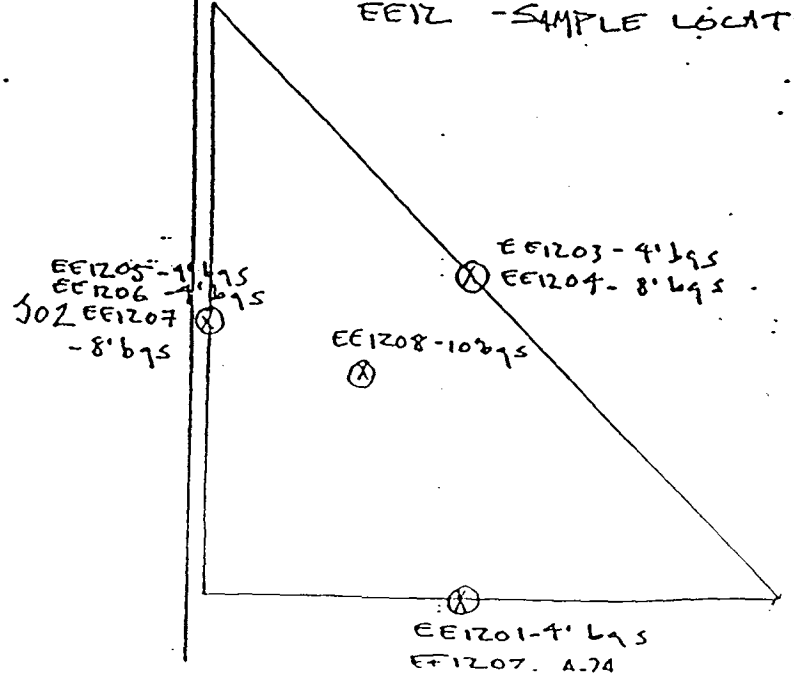
EE-12 (Former EE-59)



EE12 - SAMPLE LOCATIONS

N1



EE-12

Site: EE-12, located in Parcel D and IR-33, Hunters Point Annex

First Round
Analytical Data:

Analyte	Screening Level (mg/Kg)	Sidewall Sample Depth (feet bgs)						
		EE1201	EE1203	EE1205	EE1206	EE1202	EE1204	EE1207
		4	4	4	4	8	8	8
Chromium	450	356	1230 (1471)	235	28.2	760 (1529)	122	41.6
Lead	1,000	7.5	3.7	8.7	5.0	3.5	11.3	9.3
Mercury	2.3	<0.06	<0.06	0.14	<0.05	<0.06	0.06	0.07
TPH-motor oil	1,000	<13	<12	<11	<11	<12	19	16
Thallium	0.81	1.2	0.69	0.71	1.3	0.5	0.54	0.53

Detection Limit higher than HPAL

Analyte	Screening Level (mg/Kg)	Bottom Sample Depth (feet bgs)
		EE1208
		10
Chromium	450	989 (1312)
Lead	1,000	8.5
Mercury	2.3	0.08
TPH-motor oil	1,000	<11

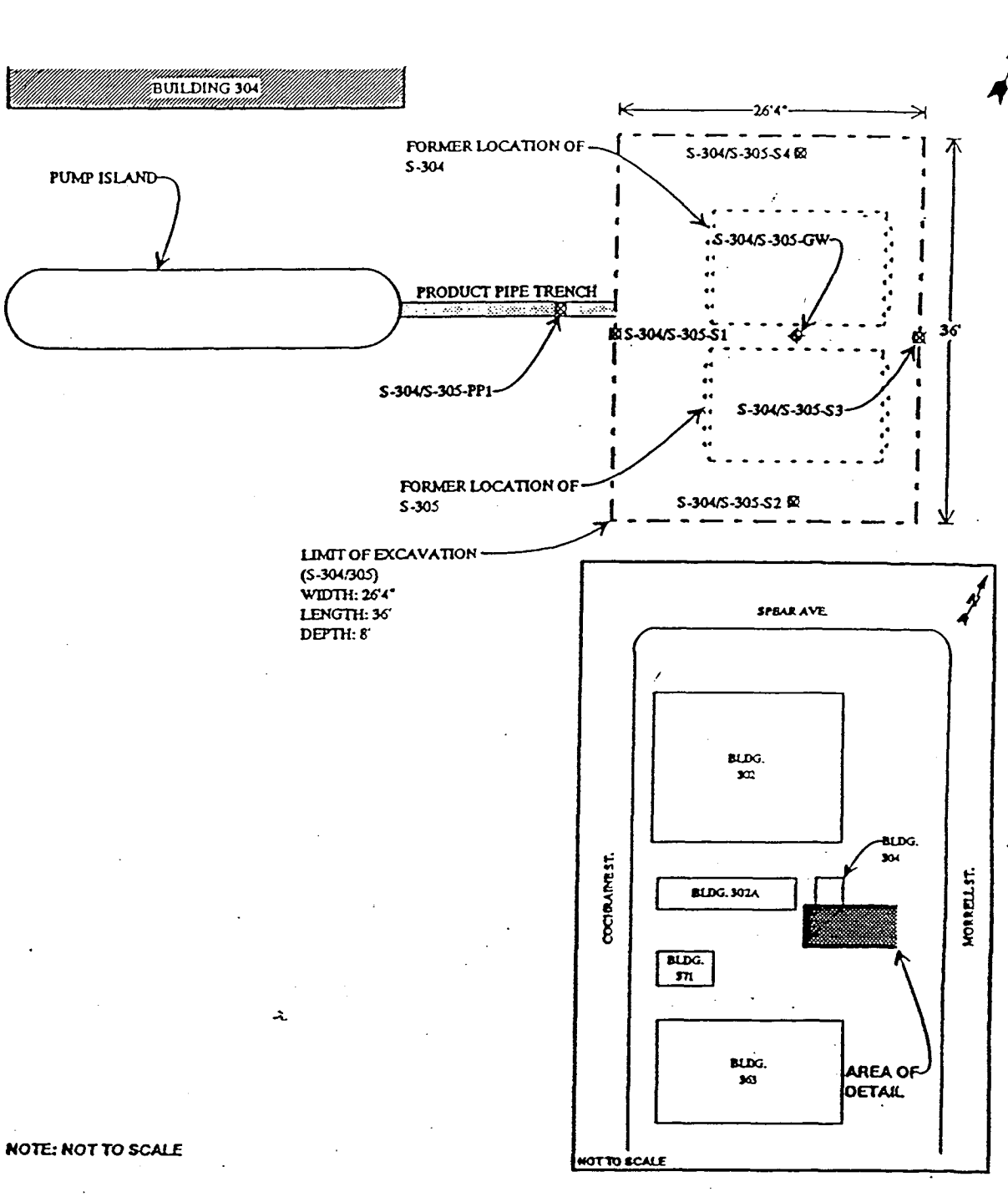
Thallium = 0.36

Notes:

- Table lists analytical results for contaminants of concern previously identified and any analyte which exceeds screening levels.
  Bold typeface indicates result above screening level.
  Screening level listed for chromium is industrial PRG. Calculated HPAL indicated in parentheses.

Action: Although results for samples EE1201 and EE1206 show thallium concentrations above the screening level, existing constraints, including the building foundation, railroad tracks and required shoring prevent additonal excavation activity.

No further action will be taken.



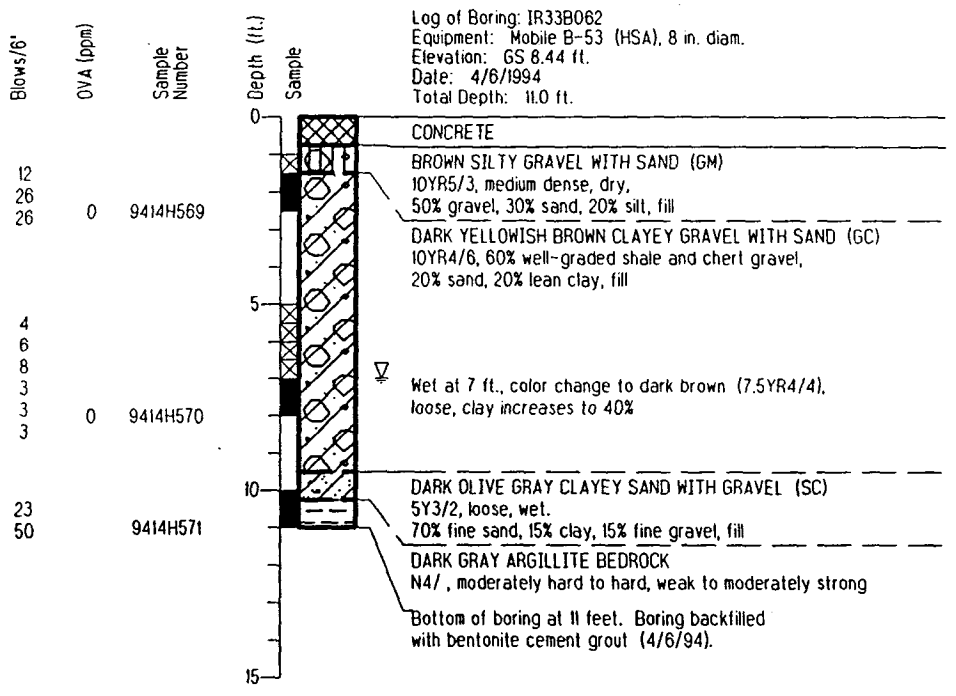
NOTE: NOT TO SCALE

LEGEND

- SOIL SAMPLE LOCATION
- GROUNDWATER SAMPLE LOCATION
- FORMER LOCATION OF UST
- BOUNDARY OF EXCAVATION

FIGURE A-6
TANKS S-304 AND S-305

Log of Boring: IR33B062
Equipment: Mobile B-53 (HSA), 8 in. diam.
Elevation: GS 8.44 ft.
Date: 4/6/1994
Total Depth: 11.0 ft.



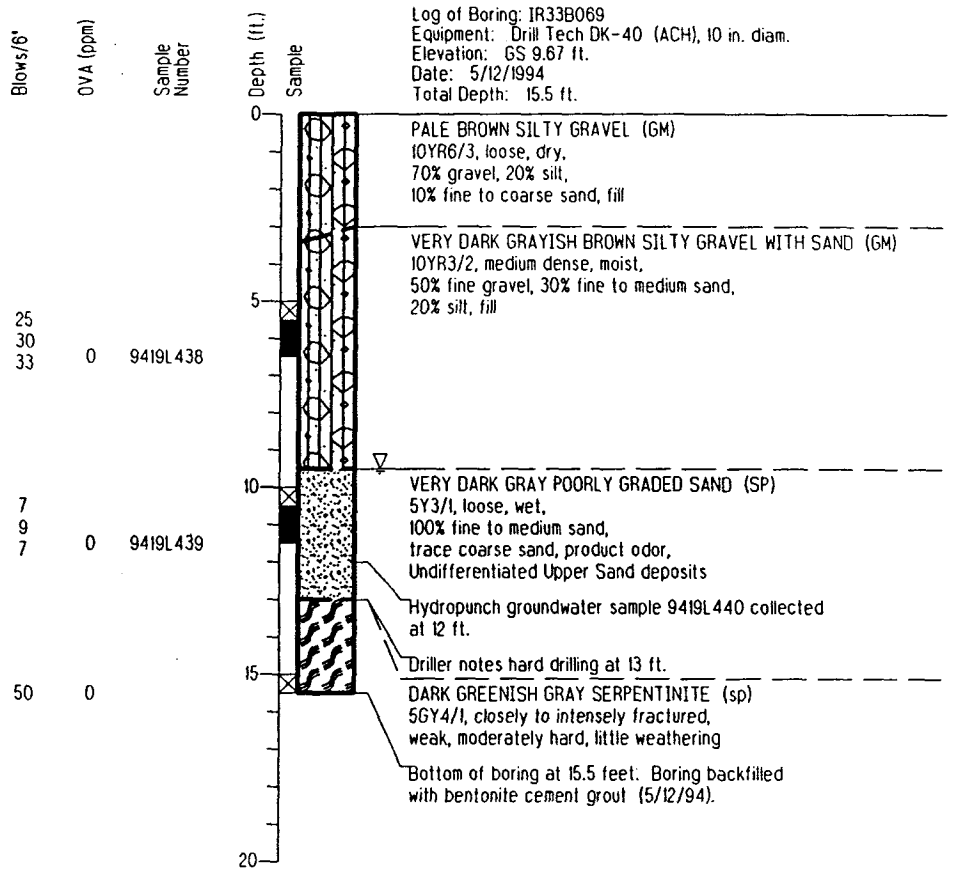
PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR33B062

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	



Harding Lawson Associates
Engineering and
Environmental Services

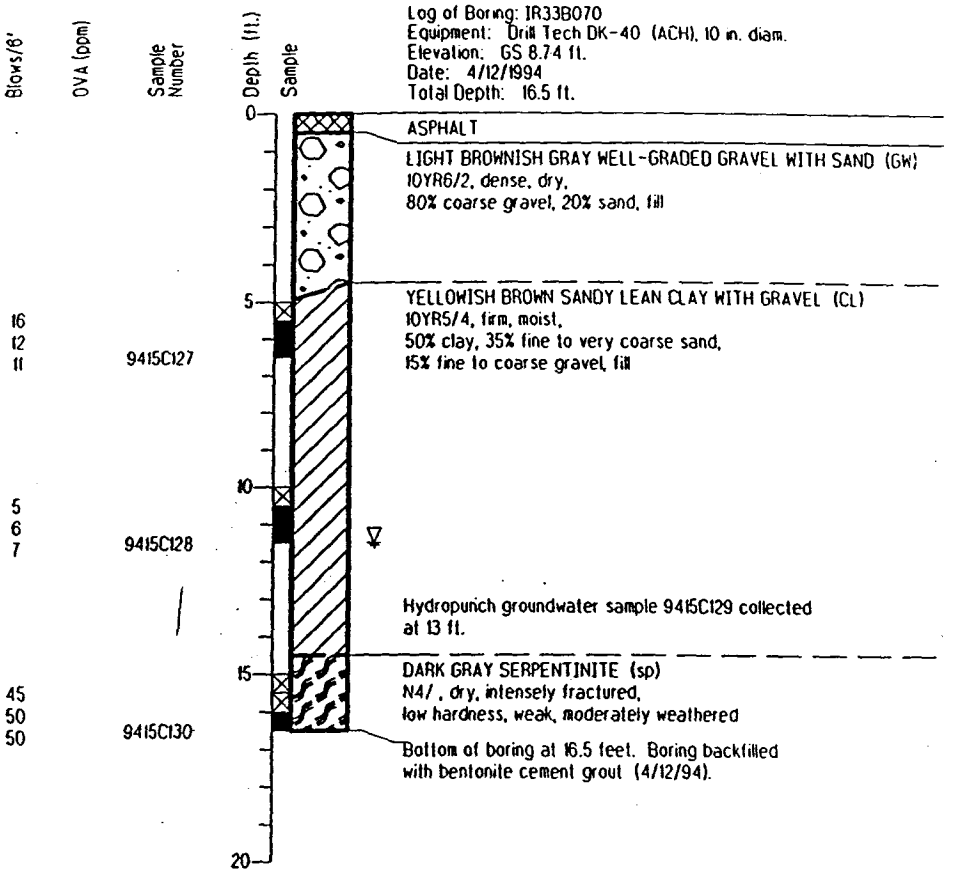
Log of Boring IR33B069

PLATE

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	

Log of Boring: IR33B070
Equipment: Drill Tech DK-40 (ACH), 10 in. diam.
Elevation: GS 8.74 ft.
Date: 4/12/1994
Total Depth: 16.5 ft.



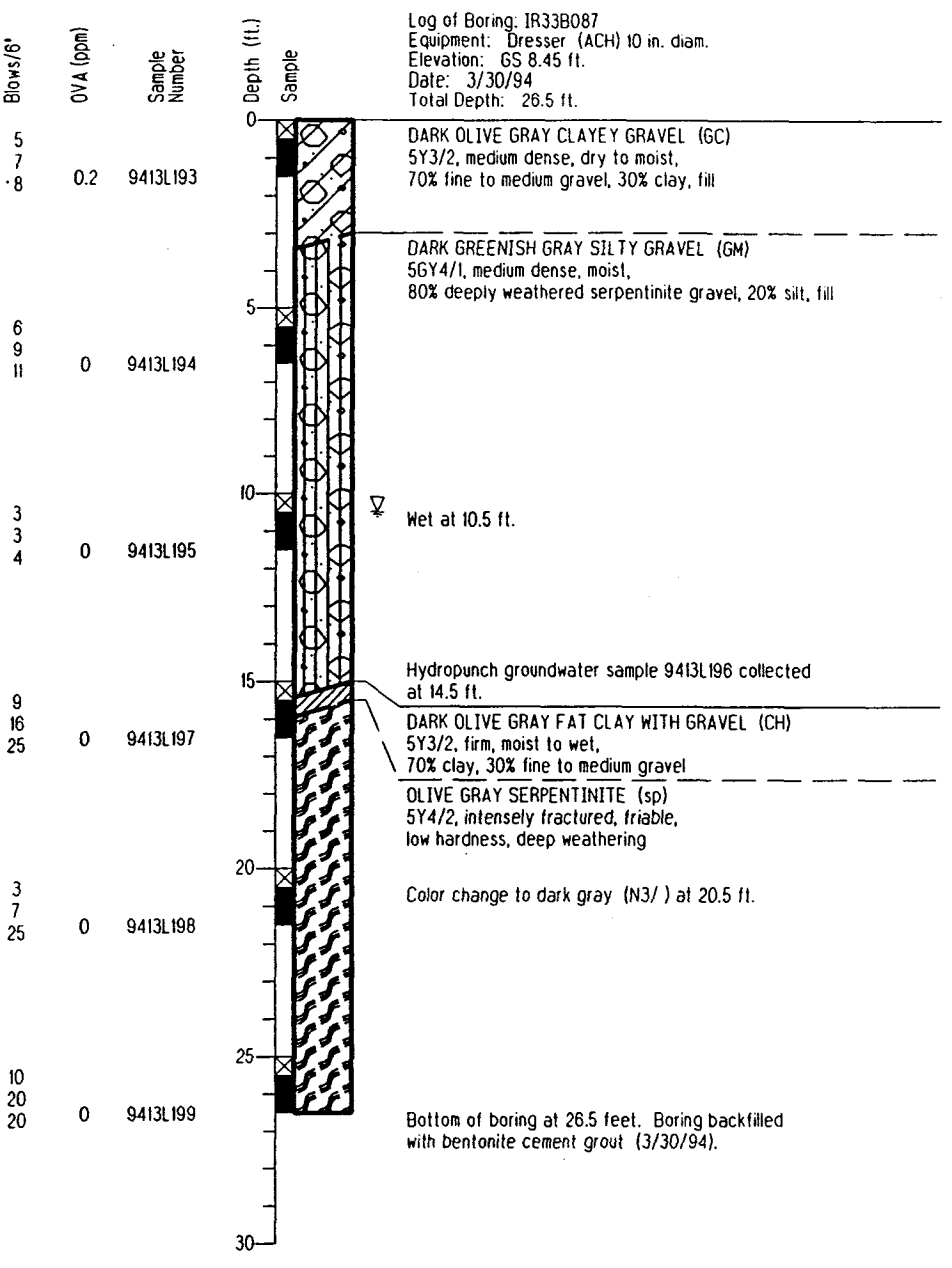
Herding Lawson Associates
Engineering and Environmental Services

Log of Boring IR33B070

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring IR33B087

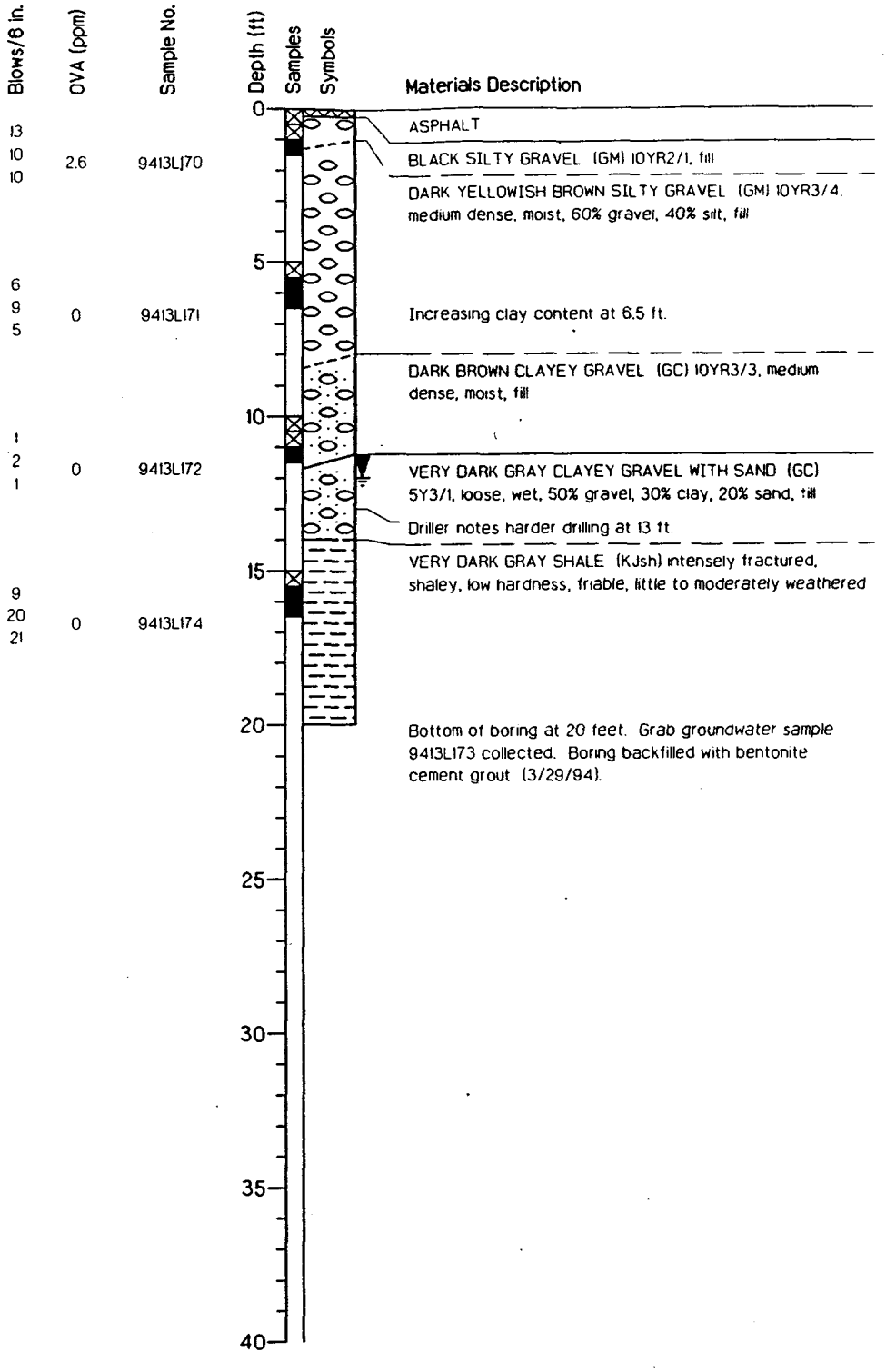
Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	

PRC Environmental Management, Inc.

LOG OF BORING IR33B091

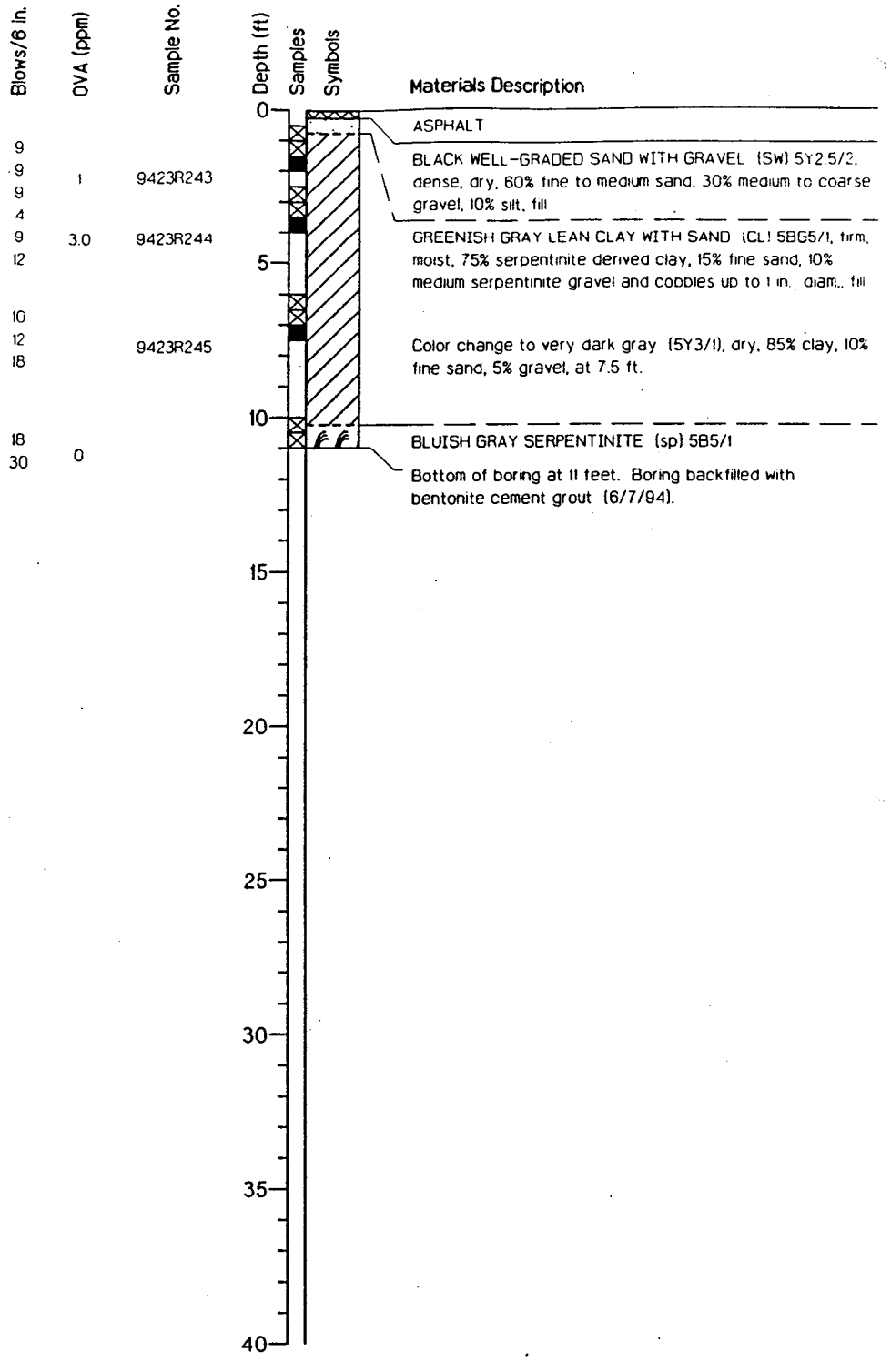


Project Number	11400 1418	Date Drilled	3/29/94
Project Name		GS Elevation	8.90 ft.
Project Task	Hunters Point Annex	Water Level	12 ft.
Project Location	San Francisco, California	Total Depth Of Hole	20 ft.
Equipment	Dresser (ACH), 10 in. diam.		

Figure

PRC Environmental Management, Inc.

LOG OF BORING IR33B105

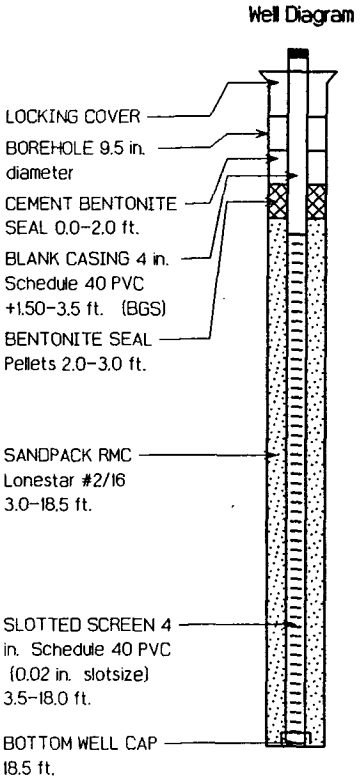


Project Number	11400 1418	Date Drilled	6/7/1994
Project Name		GS Elevation	9.21 ft.
Project Task	Hunters Point Annex	Water Level	None Encountered
Project Location	San Francisco, California	Total Depth Of Hole	11 ft.
Equipment	Mobile B-53 (HSA), 8 in. diam.		

Figure

PRC Environmental Management, Inc.
Adapted from Harding Lawson Associates

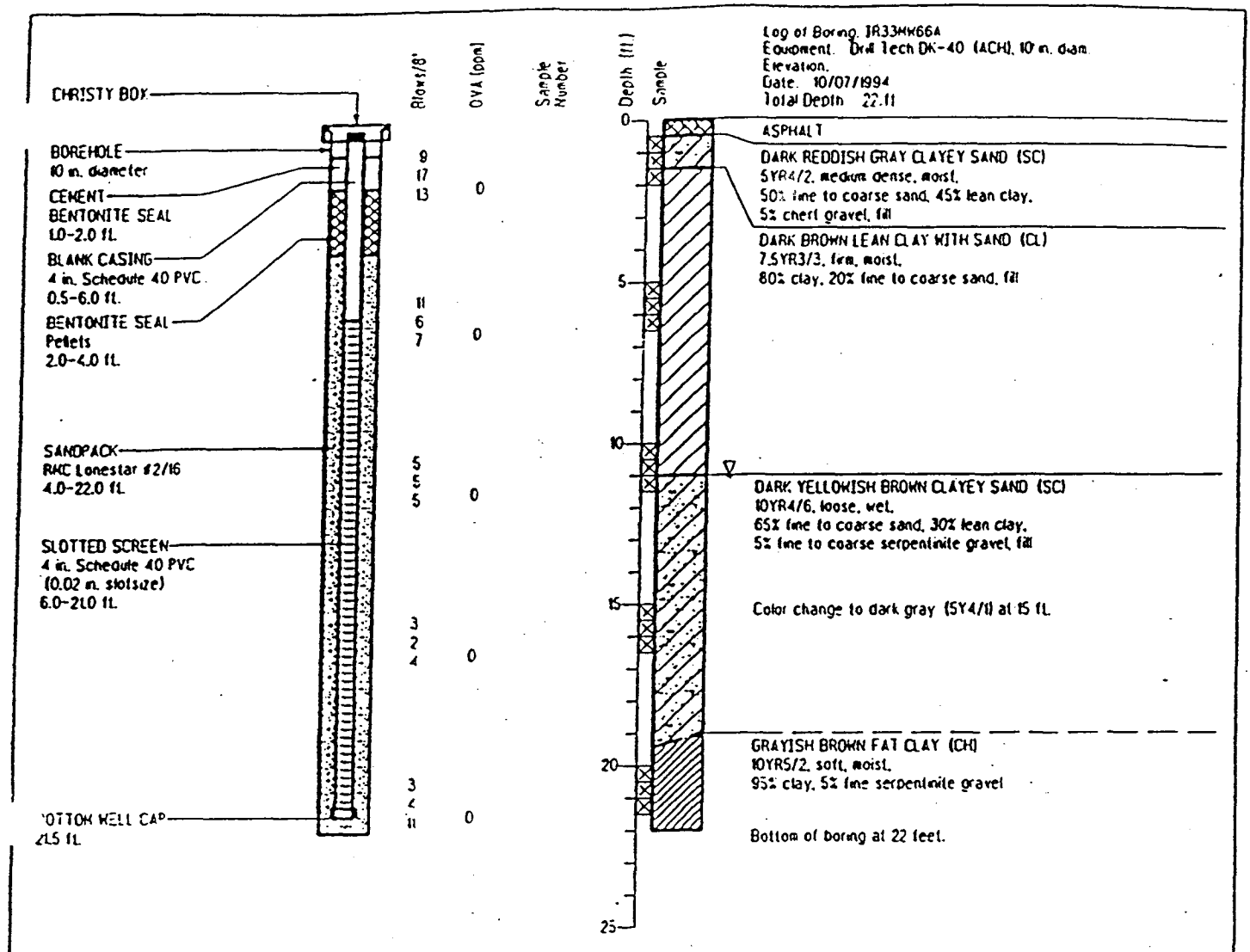
LOG OF BORING IR33MW61A



Blows/6 in.	OVA (ppm)	Sample No.	Depth (ft)	Samples	Symbols	Materials Description
			0			DARK GRAYISH BROWN WELL-GRADED SAND WITH GRAVEL (SW) 10YR4/2, dense, dry, 60% fine to coarse sand, 40% fine gravel, fill
16			5			VERY DARK GRAYISH BROWN WELL-GRADED SAND WITH GRAVEL (SW) 10YR3/2, dense, moist, 70% fine to coarse sand, 30% fine gravel, abundant brick fragments, trace silt, fill
14	0					
16						
11			10			
11	>1000					VERY DARK GRAY POORLY GRADED SAND (SP) N3/ , *dense, moist, 95% fine to medium sand, 5% silt, trace shell* fragments, black plastic, fill
13						Water: sheen on cuttings at 12 ft.
			15			Difficult drilling (concrete) at 13 ft.
36						BLACK SERPENTINITE (sp) N2.5/ , dry, closely to intensely fractured, low hardness, friable to weak, deeply weathered
50		943IR476	20			Bottom of boring at 19 feet.
			25			
			30			
			35			
			40			

Project Number	11400 1418	Date Drilled	8/1/1994
Project Name		GS Elevation	9.81 ft.
Project Task	Hunters Point Annex	Water Level	12 ft.
Project Location	San Francisco, California	Total Depth Of Hole	19 ft.
Equipment	Drill Tech DK-40 (ACH), 10 in. diam.		

Figure



PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring and Well Completion IR33MW66A

Engineering Field Activity West
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
kk	11400.1418		12/94	

Log of Boring: IR50B022
Equipment: Mobile Drill B-59 (HSA), 8 in. diam.
Elevation: GS 8.63 ft.
Date: 6/2/1994
Total Depth: 10.5 ft.

Blows/6"	OVA (ppm)	Sample Number	Depth (ft.)	Sample
			0	
14				
16				
20	0	9422R216		
			5	
24				
50	0	9422R217		
			10	
50				
			15	

ASPHALT

DARK BROWN CLAYEY SAND WITH GRAVEL (SC)
7.5YR3/4, dense, moist,
70% fine to coarse sand, 15% fine gravel,
15% lean clay, fill

DARK YELLOWISH BROWN SANDY FAT CLAY (CH)
10YR3/4, firm, moist,
60% clay, 30% fine to coarse chert sand,
10% fine chert gravel

BLACK SHALE (KJsh)
dry, low hardness, weak, deep to moderate weathering, locally crushed

Bottom of boring at 10.5 feet. Boring backfilled with bentonite cement grout (6/2/94).

PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring IR50B022

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 1418		05/95	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADDED IR33B109	6-19-00	

SYM NO.	SYM	DESCRIPTION
1		A-AQUIFER MONITORING WELL
2		B-AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A-AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14		STORM DRAIN
15		ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17		FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS

SYM NO.	SYM	DESCRIPTION
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND-AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A-AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

DWG NO. 332082 SH 1 REV A

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

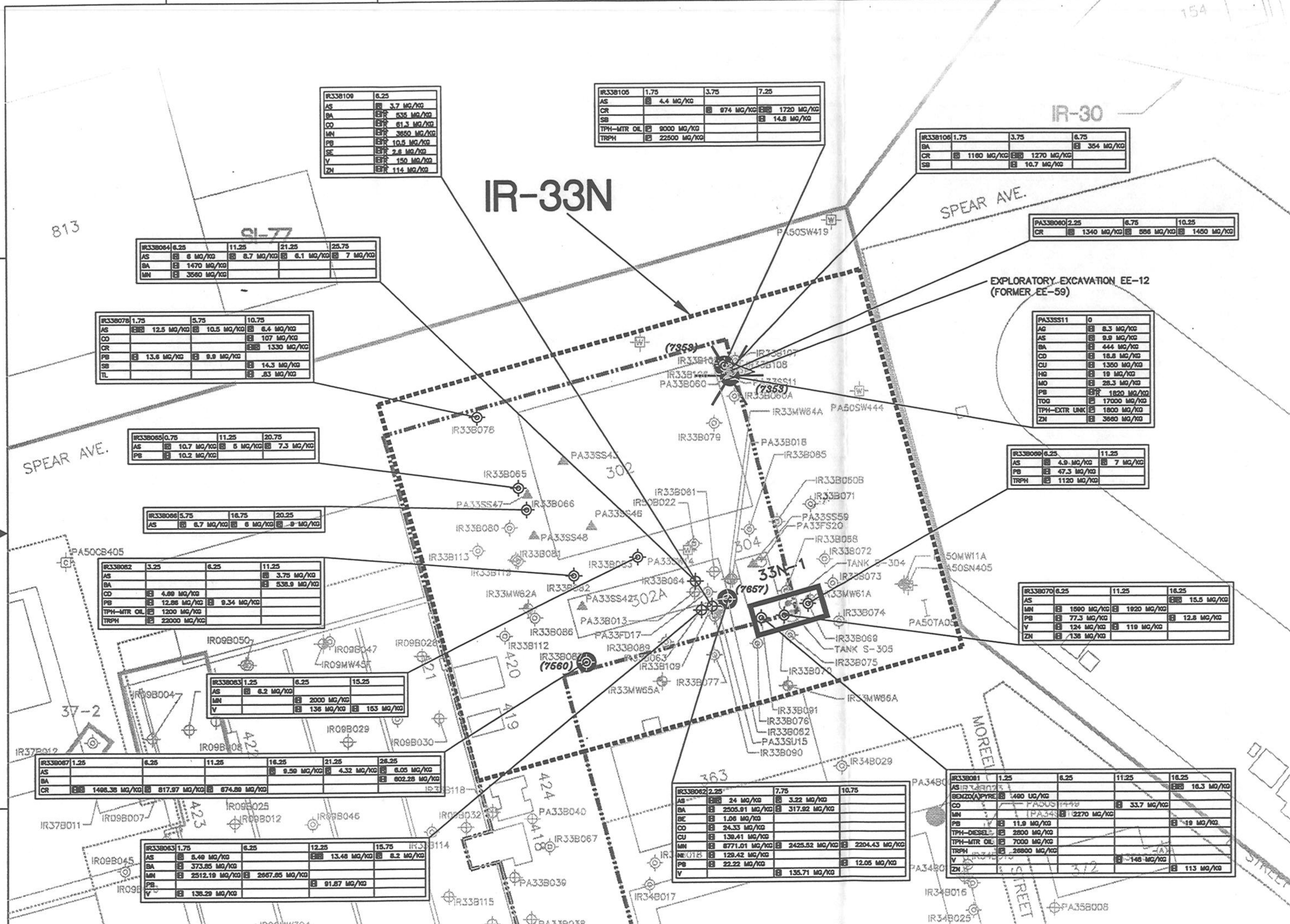
SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08-2 SHT 1 of 4

PARCEL D
IR-33N SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3320821A.DWG



IR33B109	6.25
AS	C 3.7 MG/KG
BA	H R 535 MG/KG
CO	H R 61.3 MG/KG
MN	H R 3650 MG/KG
PB	H R 10.5 MG/KG
SE	H R 2.6 MG/KG
V	H R 150 MG/KG
ZN	H R 114 MG/KG

IR33B105	1.75	3.75	7.25
AS	H 4.4 MG/KG		
CR		H 974 MG/KG	C H 1720 MG/KG
SB			H 14.8 MG/KG
TPH-MTR OIL	P 9000 MG/KG		
TRPH	P 22500 MG/KG		

IR33B106	1.75	3.75	6.75
BA			H 354 MG/KG
CR	H 1160 MG/KG	C H 1270 MG/KG	
SB		H 10.7 MG/KG	

PA33B060	2.25	6.75	10.25
CR	H 1340 MG/KG	H 586 MG/KG	H 1450 MG/KG

PA33SS11	0
AG	H 8.3 MG/KG
AS	H 9.9 MG/KG
BA	H 444 MG/KG
CD	H 18.8 MG/KG
CU	H 1350 MG/KG
HG	H 19 MG/KG
MO	H 28.3 MG/KG
PB	H R 1820 MG/KG
TOG	P 17000 MG/KG
TPH-EXTR UNK	P 1800 MG/KG
ZN	H 3660 MG/KG

IR33B069	6.25	11.25
AS	H 4.9 MG/KG	H 7 MG/KG
PB	H 47.3 MG/KG	
TRPH	P 1120 MG/KG	

IR33B064	6.25	11.25	21.25	25.75
AS	H 6 MG/KG	H 8.7 MG/KG	H 6.1 MG/KG	H 7 MG/KG
BA	H 1470 MG/KG			
MN	H 3560 MG/KG			

IR33B078	1.75	5.75	10.75
AS	C H 12.5 MG/KG	H 10.5 MG/KG	H 6.4 MG/KG
CO			H 107 MG/KG
CR			C H 1330 MG/KG
PB	H 13.6 MG/KG	H 9.9 MG/KG	
SB			H 14.3 MG/KG
TL			H .83 MG/KG

IR33B065	0.75	11.25	20.75
AS	H 10.7 MG/KG	H 5 MG/KG	H 7.3 MG/KG
PB	H 10.2 MG/KG		

IR33B066	5.75	16.75	20.25
AS	H 6.7 MG/KG	H 6 MG/KG	H 9 MG/KG

IR33B082	3.25	6.25	11.25
AS			H 3.75 MG/KG
BA			H 538.9 MG/KG
CD	H 4.69 MG/KG		
PB	H 12.86 MG/KG	H 9.34 MG/KG	
TPH-MTR OIL	P 1200 MG/KG		
TRPH	P 22000 MG/KG		

IR33B070	6.25	11.25	16.25
AS			C H 15.5 MG/KG
MN	H 1590 MG/KG	H 1920 MG/KG	
PB	H 77.3 MG/KG		H 12.8 MG/KG
V	H 124 MG/KG	H 119 MG/KG	
ZN	H 138 MG/KG		

IR33B083	1.25	6.25	15.25
AS	H 6.2 MG/KG		
MN		H 2000 MG/KG	
V		H 136 MG/KG	H 153 MG/KG

IR33B087	1.25	6.25	11.25	16.25	21.25	26.25
AS				H 9.59 MG/KG	H 4.32 MG/KG	H 6.05 MG/KG
BA						H 602.28 MG/KG
CR	C H 1496.36 MG/KG	H 817.97 MG/KG	H 674.89 MG/KG			

IR33B062	2.25	7.75	10.75
AS	C H 24 MG/KG	H 3.22 MG/KG	
BA	H 2505.91 MG/KG	H 317.92 MG/KG	
BE	H 1.06 MG/KG		
CO	H 24.33 MG/KG		
CU	H 139.41 MG/KG		
MN	H 8771.01 MG/KG	H 2425.52 MG/KG	H 2204.43 MG/KG
NI	H 129.42 MG/KG		
PB	H 22.22 MG/KG		H 12.05 MG/KG
V		H 135.71 MG/KG	

IR33B081	1.25	6.25	11.25	16.25
AS				C H 16.3 MG/KG
BENZO(A)PYRENE	H 460 UG/KG			
CO			H 33.7 MG/KG	
MN		H 2270 MG/KG		
PB	H 11.9 MG/KG			H 19 MG/KG
TPH-DIESEL	P 2800 MG/KG			
TPH-MTR OIL	P 7000 MG/KG			
TRPH	P 26800 MG/KG			
V			H 146 MG/KG	
ZN				H 113 MG/KG

IR33B063	1.75	6.25	12.25	15.75
AS	H 5.49 MG/KG		C H 13.48 MG/KG	H 8.2 MG/KG
BA	H 373.85 MG/KG			
MN	H 2512.19 MG/KG	H 2667.65 MG/KG		
PB			H 91.67 MG/KG	
V	H 138.29 MG/KG			

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW46F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
156	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs) — ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (μg/kg).

- C EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- R EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- H EXCEEDS HPAL
- P EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08-2 SHT 2 of 4

PARCEL D

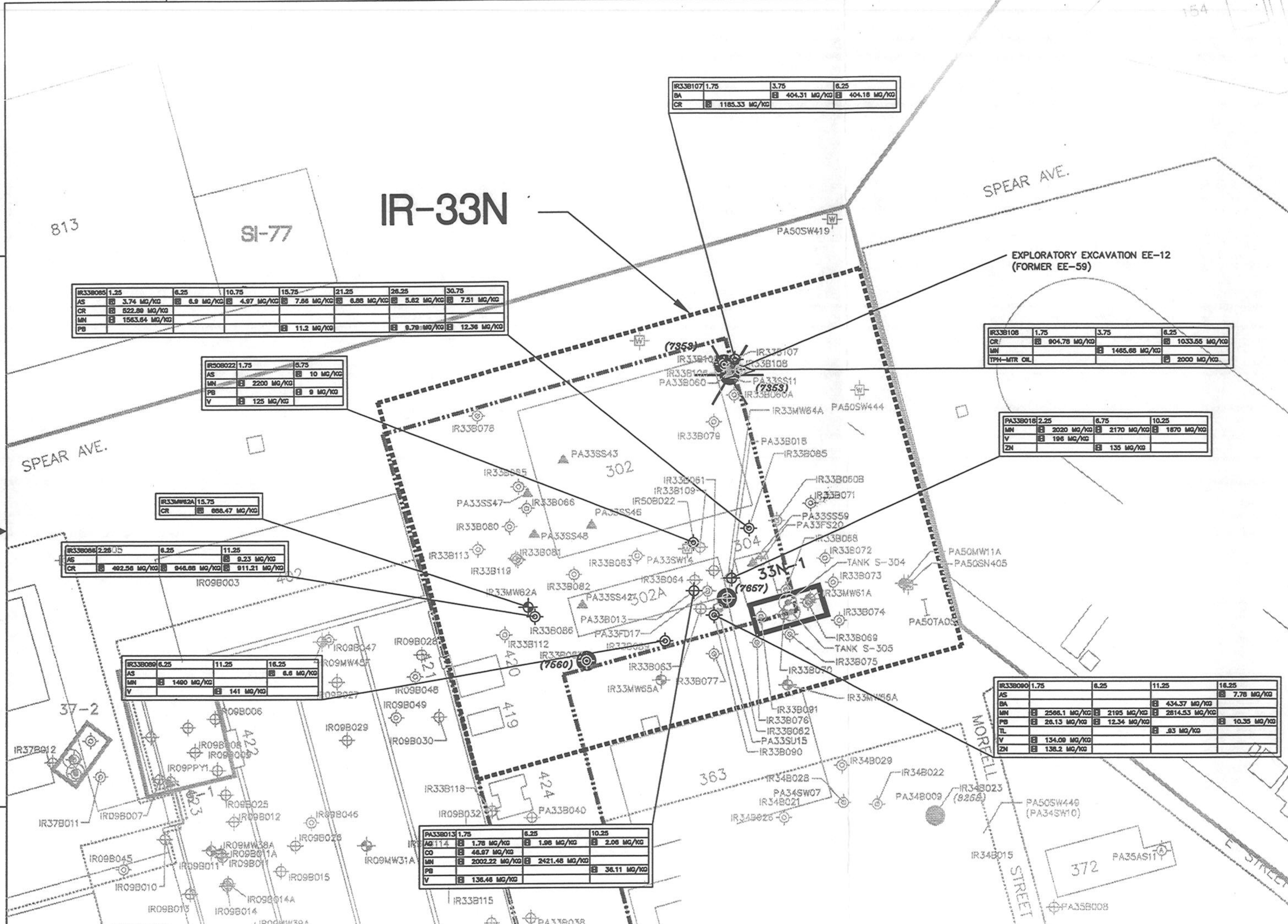
IR-33N SOIL RESULTS

EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 332082 SH 2 REV A

FILE NAME: 3320822A.DWG



IR33B107	1.75	3.75	6.25
BA		404.31 MG/KG	404.18 MG/KG
CR	1185.33 MG/KG		

IR33B085	1.25	6.25	10.75	15.75	21.25	26.25	30.75
AS	3.74 MG/KG	6.9 MG/KG	4.97 MG/KG	7.66 MG/KG	6.88 MG/KG	5.62 MG/KG	7.51 MG/KG
CR	522.89 MG/KG						
MN	1563.64 MG/KG						
PB				11.2 MG/KG		9.79 MG/KG	12.36 MG/KG

IR50B022	1.75	5.75
AS		10 MG/KG
MN	2200 MG/KG	
PB		9 MG/KG
V	125 MG/KG	

IR33B108	1.75	3.75	6.25
CR	904.78 MG/KG		1033.55 MG/KG
MN		1465.68 MG/KG	
TPH-MTR OIL			2000 MG/KG

PA33B018	2.25	6.75	10.25
MN	2020 MG/KG	2170 MG/KG	1870 MG/KG
V	196 MG/KG		
ZN		135 MG/KG	

IR33MW62A	15.75
CR	688.47 MG/KG

IR33B086	2.25	6.25	11.25
AS			9.23 MG/KG
CR	492.56 MG/KG	946.68 MG/KG	911.21 MG/KG

IR33B089	6.25	11.25	16.25
AS			6.6 MG/KG
MN	1490 MG/KG		
V		141 MG/KG	

IR33B090	1.75	6.25	11.25	16.25
AS				7.78 MG/KG
BA			434.37 MG/KG	
MN	2566.1 MG/KG	2195 MG/KG	2814.53 MG/KG	
PB	26.13 MG/KG	12.34 MG/KG		10.35 MG/KG
TL			.93 MG/KG	
V	134.09 MG/KG			
ZN	138.2 MG/KG			

PA33B013	1.75	6.25	10.25
AG	1.76 MG/KG	1.96 MG/KG	2.06 MG/KG
CO	46.97 MG/KG		
MN	2002.22 MG/KG	2421.46 MG/KG	
PB			36.11 MG/KG
V	136.46 MG/KG		

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW40F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
156	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs) — ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).

- EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS HPAL
- EXCEEDS PETROLEUM SCREENING CRITERIA

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

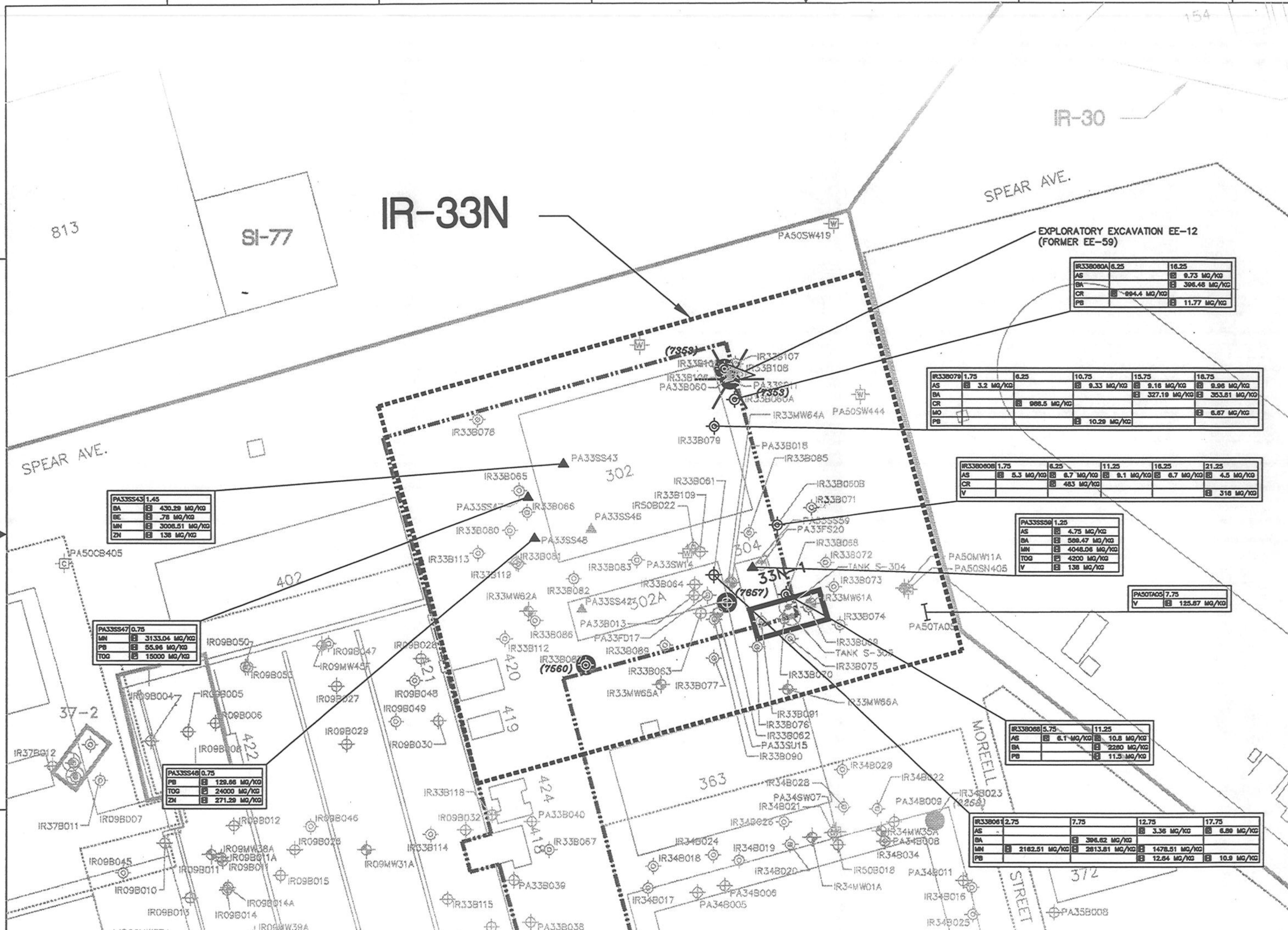
SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08-2 SHT 3 of 4
PARCEL D
IR-33N SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 332082 SH 3 REV A

FILE NAME: 3320823A.DWG



PA33SS43	1.45
BA	H 430.29 MG/KG
BE	H .78 MG/KG
MN	H 3008.51 MG/KG
ZN	H 138 MG/KG

PA33SS47	0.75
MN	H 3133.04 MG/KG
PB	H 55.96 MG/KG
TOG	P 15000 MG/KG

PA33SS48	0.75
PB	H 129.66 MG/KG
TOG	P 24000 MG/KG
ZN	H 271.29 MG/KG

IR33B060A	6.25	16.25
AS		H 9.73 MG/KG
BA		H 396.48 MG/KG
CR	H 994.4 MG/KG	
PB		H 11.77 MG/KG

IR33B079	1.75	6.25	10.75	15.75	16.75
AS	H 3.2 MG/KG		H 9.33 MG/KG	H 9.16 MG/KG	H 9.96 MG/KG
BA				H 327.19 MG/KG	H 353.81 MG/KG
CR		H 988.5 MG/KG			
MO					H 6.67 MG/KG
PB			H 10.29 MG/KG		

IR33B060B	1.75	6.25	11.25	16.25	21.25
AS	H 5.3 MG/KG	H 6.7 MG/KG	H 9.1 MG/KG	H 6.7 MG/KG	H 4.5 MG/KG
CR		H 483 MG/KG			
V					H 318 MG/KG

PA33SS59	1.25
AS	H 4.75 MG/KG
BA	H 589.47 MG/KG
MN	H 4048.06 MG/KG
TOG	P 4200 MG/KG
V	H 138 MG/KG

PA50TA05	7.75
V	H 125.87 MG/KG

IR33B068	5.75	11.25
AS	H 6.1 MG/KG	H 10.8 MG/KG
BA		H 2260 MG/KG
PB		H 11.5 MG/KG

IR33B061	2.75	7.75	12.75	17.75
AS			H 3.36 MG/KG	H 6.89 MG/KG
BA		H 396.62 MG/KG		
MN	H 2162.51 MG/KG	H 2813.81 MG/KG	H 1478.51 MG/KG	
PB			H 12.64 MG/KG	H 10.9 MG/KG

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
UST3(S-138)	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
✳	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
■ ●	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
□	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

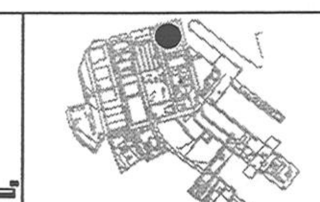
SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs)

ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).

- C EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- R EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- H EXCEEDS HPAL
- P EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET



PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08-2 SHT 4 of 4
PARCEL D
IR-33N SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 332082 SH 4 REV A

FILE NAME: 3320824A.DWG

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

SYM NO.	SYM	DESCRIPTION
1		A–AQUIFER MONITORING WELL
2		B–AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A–AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17		FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25		CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND–AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A–AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

DWG NO. 332083 SH 1 REV –

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08–3 SHT 1 of 2

PARCEL D

IR–33N GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3320831_.DWG

IR33MW65A	10/26/94	1/17/96	2/20/96
AS			1.4 UG/L
CHLOROFORM		1 UG/L	6 UG/L
TPH-MTR OIL	310 UG/L		

IR33MW64A	10/27/94	1/17/96	2/20/96
CARBON TET		.3 UG/L	.3 UG/L
CHLOROFORM		3 UG/L	3 UG/L
CU	10.81 UG/L		
TPH-MTR OIL	540 UG/L		

IR33MW61A	8/8/94	1/16/96	2/15/96	4/8/96
1,1,2-TCA			.5 UG/L	
1,2-DCA			.5 UG/L	
2-MNAPHTH	24 UG/L			
AS	70.	27.6 UG/L	7.9 UG/L	
BENZENE	650 UG/L	19 UG/L	3 UG/L	
CR		90.4 UG/L	276 UG/L	
CU	9.32 UG/L	55.9 UG/L	81.7 UG/L	
HEXCLETHANE	43 UG/L			
HG			.1 UG/L	
MO		74.8 UG/L	78.8 UG/L	
NAPHTHALENE	58 UG/L	8 UG/L		
NI		26.6 UG/L	29.1 UG/L	
NITRITE				9100 UG/L
TL		2.2 UG/L		
TPH-DIESEL	1700 UG/L	680 UG/L	530 UG/L	
TPH-GASOLINE	8800 UG/L	650 UG/L	140 UG/L	400 UG/L
TPH-MTR OIL	530 UG/L	430 UG/L	480 UG/L	
TRPH	2500 UG/L			
V		59.9 UG/L	50.9 UG/L	

PA50MW11A	4/27/93	2/9/96	3/14/96
AS	9.16 UG/L		3.2 UG/L
NI	9.53 UG/L	16.7 UG/L	11.7 UG/L
TPH-MTR OIL		140 UG/L	140 UG/L

IR33MW62A	8/29/94	1/17/96	2/20/96
AS	6.82 UG/L	13.4 UG/L	7.4 UG/L
CHLOROFORM		.7 UG/L	1 UG/L
CU	3.01 UG/L		
TPH-MTR OIL	1000 UG/L	110 UG/L	

IR33MW68A	10/31/94	1/17/96
NI		12.1 UG/L
TL	2.32 UG/L	2.2 UG/L
TPH-MTR OIL	610 UG/L	
TRPH	1000 UG/L	

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
150	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
(UST20-12B)	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
(5000)	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:
1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE THAT EITHER NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — DATE OF GROUNDWATER SAMPLE, G=GRAB, OR HYDROPUNCH SAMPLE DEPTH.
ANALYTE — CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
- EXCEEDS CARCINOGENIC TAP WATER PRG
- EXCEEDS NON-CARCINOGENIC TAP WATER PRG
- EXCEEDS NAWQC
- EXCEEDS MCL
- EXCEEDS PETROLEUM SCREENING CRITERIA
- EXCEEDS HGAL

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.08-3 SHT 2 of 2
PARCEL D
IR-33N GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

REV -
SH 2
DWG NO. 332083

1 FILE NAME: 3320832_.DWG

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
METAL (MG/KG)	ALUMINUM	NA	NA	NA	31,200
METAL (MG/KG)	ANTIMONY	NA	NA	NA	ND (0.53)
METAL (MG/KG)	ARSENIC	NA	NA	NA	3.7 #
METAL (MG/KG)	BARIUM	NA	NA	NA	535 ~
METAL (MG/KG)	BERYLLIUM	NA	NA	NA	ND (0.03)
METAL (MG/KG)	CADMIUM	NA	NA	NA	ND (0.05)
METAL (MG/KG)	CALCIUM	NA	NA	NA	20,400
METAL (MG/KG)	CHROMIUM	NA	NA	NA	139
METAL (MG/KG)	COBALT	NA	NA	NA	61.3 ~
METAL (MG/KG)	COPPER	NA	NA	NA	90.8
METAL (MG/KG)	IRON	NA	NA	NA	59,000
METAL (MG/KG)	LEAD	NA	NA	NA	10.5 ~
METAL (MG/KG)	MAGNESIUM	NA	NA	NA	24,500
METAL (MG/KG)	MANGANESE	NA	NA	NA	3,650 ~
METAL (MG/KG)	MERCURY	NA	NA	NA	0.16
METAL (MG/KG)	MOLYBDENUM	NA	NA	NA	ND (0.16)
METAL (MG/KG)	NICKEL	NA	NA	NA	227
METAL (MG/KG)	POTASSIUM	NA	NA	NA	679
METAL (MG/KG)	SELENIUM	NA	NA	NA	2.6 ~
METAL (MG/KG)	SILVER	NA	NA	NA	ND (0.11)
METAL (MG/KG)	SODIUM	NA	NA	NA	ND (55.7)
METAL (MG/KG)	VANADIUM	NA	NA	NA	150 ~
METAL (MG/KG)	ZINC	NA	NA	NA	114 ~
HEXAVALENT CHROMIUM (MG/KG)	CHROMIUM VI	NA	NA	NA	0.08
VOLATILE ORGANIC COMPOUND (MG/KG)	1,1,1-TRICHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,1,2,2-TETRACHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
VOLATILE ORGANIC COMPOUND (MG/KG)	1,1,2-TRICHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,1-DICHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,1-DICHLOROETHENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,2-DICHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,2-DICHLOROETHENE (TOTAL)	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	1,2-DICHLOROPROPANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	2-BUTANONE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	2-HEXANONE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	4-METHYL-2-PENTANONE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	ACETONE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	BENZENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	BROMODICHLOROMETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	BROMOFORM	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	BROMOMETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CARBON DISULFIDE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CARBON TETRACHLORIDE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CHLOROBENZENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CHLOROETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CHLOROFORM	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CHLOROMETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	CIS-1,3-DICHLOROPROPENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	DIBROMOCHLOROMETHANE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	ETHYLBENZENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	METHYLENE CHLORIDE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	STYRENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	TETRACHLOROETHENE	0.001	ND (0.01)	NA	NA

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
VOLATILE ORGANIC COMPOUND (MG/KG)	TOLUENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	TRANS-1,3-DICHLOROPROPENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	TRICHLOROETHENE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	VINYL CHLORIDE	ND (0.012)	ND (0.01)	NA	NA
VOLATILE ORGANIC COMPOUND (MG/KG)	XYLENE (TOTAL)	ND (0.012)	ND (0.01)	NA	NA
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	1,2,4-TRICHLOROBENZENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	1,2-DICHLOROBENZENE	NA	NA	NA	ND (0.18)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	1,3-DICHLOROBENZENE	NA	NA	NA	ND (0.18)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	1,4-DICHLOROBENZENE	NA	NA	NA	ND (0.18)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,2'-OXYBIS(1-CHLOROPROPANE)	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,4,5-TRICHLOROPHENOL	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,4,6-TRICHLOROPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,4-DICHLOROPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,4-DIMETHYLPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,4-DINITROTOLUENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2,6-DINITROTOLUENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-CHLORONAPHTHALENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-CHLOROPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-METHYLNAPHTHALENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-METHYLPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-NITROANILINE	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	2-NITROPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	3,3'-DICHLOROBENZIDINE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	3-NITROANILINE	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4,6-DINITRO-2-METHYLPHENOL	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-BROMOPHENYL-PHENYLETHER	NA	NA	NA	ND (0.38)

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-CHLORO-3-METHYLPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-CHLOROANILINE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-CHLOROPHENYL-PHENYLETHER	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-METHYLPHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-NITROANILINE	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	4-NITROPHENOL	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	ACENAPHTHENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	ACENAPHTHYLENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	ANTHRACENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BENZO(A)ANTHRACENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BENZO(A)PYRENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BENZO(B)FLUORANTHENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BENZO(G,H,I)PERYLENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BENZO(K)FLUORANTHENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BIS(2-CHLOROETHOXY)METHANE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BIS(2-CHLOROETHYL)ETHER	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	ND (0.15)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	BUTYLBENZYLPHTHALATE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	CARBAZOLE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	CHRYSENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DIBENZ(A,H)ANTHRACENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DIBENZOFURAN	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DIETHYLPHTHALATE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DIMETHYLPHTHALATE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DI-N-BUTYLPHTHALATE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	DI-N-OCTYLPHTHALATE	NA	NA	NA	ND (0.38)

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	FLUORANTHENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	FLUORENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	HEXACHLOROBENZENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	HEXACHLOROBUTADIENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	HEXACHLOROCYCLOPENTADIENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	HEXACHLOROETHANE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	INDENO(1,2,3-CD)PYRENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	ISOPHORONE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	NAPHTHALENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	NITROBENZENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	N-NITROSO-DI-N-PROPYLAMINE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	N-NITROSODIPHENYLAMINE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	PENTACHLOROPHENOL	NA	NA	NA	ND (0.95)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	PHENANTHRENE	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	PHENOL	NA	NA	NA	ND (0.38)
SEMIVOLATILE ORGANIC COMPOUND (MG/KG)	PYRENE	NA	NA	NA	ND (0.38)
PESTICIDE (MG/KG)	4,4'-DDD	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	4,4'-DDE	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	4,4'-DDT	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ALDRIN	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	ALPHA-BHC	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	ALPHA-CHLORDANE	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	AROCLOR-1016	NA	NA	NA	ND (0.019)
PESTICIDE (MG/KG)	AROCLOR-1221	NA	NA	NA	ND (0.018)
PESTICIDE (MG/KG)	AROCLOR-1232	NA	NA	NA	ND (0.018)
PESTICIDE (MG/KG)	AROCLOR-1242	NA	NA	NA	ND (0.018)

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

SOIL ANALYTICAL RESULTS, IR33 NORTH
RISK MANAGEMENT REVIEW - DATA GAPS INVESTIGATION
HUNTERS POINT SHIPYARD, PARCEL D

Station Number:		**IR33B109**	**IR33B109 (DUP)**	**IR33B109**	**IR33B109**
Sampling Depth:(feet bgs)		**5.75**	**5.75**	**6.25**	**6.25**
Sample Number		**0018D030**	**0018D033**	**0018D031**	**0018D032**
Sample Date		**5/9/2000**	**5/9/2000**	**5/9/2000**	**5/9/2000**
PESTICIDE (MG/KG)	AROCLOR-1248	NA	NA	NA	ND (0.018)
PESTICIDE (MG/KG)	AROCLOR-1254	NA	NA	NA	ND (0.018)
PESTICIDE (MG/KG)	AROCLOR-1260	NA	NA	NA	ND (0.018)
PESTICIDE (MG/KG)	BETA-BHC	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	DELTA-BHC	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	DIELDRIN	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ENDOSULFAN I	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	ENDOSULFAN II	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ENDOSULFAN SULFATE	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ENDRIN	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ENDRIN ALDEHYDE	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	ENDRIN KETONE	NA	NA	NA	ND (0.004)
PESTICIDE (MG/KG)	GAMMA-BHC (LINDANE)	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	GAMMA-CHLORDANE	NA	NA	NA	ND (0.002)
PESTICIDE (MG/KG)	HEPTACHLOR	NA	NA	NA	ND (0.0003)
PESTICIDE (MG/KG)	HEPTACHLOR EPOXIDE	NA	NA	NA	ND (0.0003)
PESTICIDE (MG/KG)	METHOXYCHLOR	NA	NA	NA	ND (0.019)
PESTICIDE (MG/KG)	TOXAPHENE	NA	NA	NA	ND (0.097)
PETROLEUM HYDROCARBON (MG/KG)	DIESEL RANGE ORGANICS	NA	NA	NA	ND (11.)
PETROLEUM HYDROCARBON (MG/KG)	GASOLINE RANGE ORGANICS	NA	NA	ND (0.49)	NA
PETROLEUM HYDROCARBON (MG/KG)	MOTOR OIL RANGE ORGANICS	NA	NA	NA	34
MISCELLANEOUS	PERCENT MOISTURE	16.5	18.6	16	12.8
MISCELLANEOUS	PH	NA	NA	NA	7.72

Notes: bgs=Below Ground Surface, MG/KG=Milligram Per Kiligram, NA=Not Analysed,ND( )=Not Detected (detection limit)
= detected concentration greater than 1998 Industrial PRG, detected concentration greater than Hunters Point ambient level

R&M Daily Oversight Report
CTO 005: Oversight of Sump, Floor Drain, Floor Vaults, and False Floor Cleanout
Hunters Point

Date: 4/25/00
Weather/Temp: Sunny, Warm, 75^0
Client: TtEMI/Navy
R&M Personnel Onsite: D. Harp
Other Personnel Onsite: TtEMI, Chow Engineering, Navy personnel
Oversight time: 0800-1500

Equipment used: Shovels, 55-gallon drums

R&M Equipment used: Digital camera

Location of Field Activities: Sump located outside of Building 302A

Summary of Field Activities: R&M arrived onsite and met with personnel from TtEMI, Chow Engineering, and the Navy in the parking lot of Dago Mary's restaurant. All parties made brief visits to Building 302A and 274 to discuss the logistics involved during clean up and oversight activities.

Chow Engineering began cleanup work at Building 302A. Soil, water and debris, located in the sump outside of Building 302A, was removed by shovel and containerized within 55-gallon drums. Approximately 4-5 drums were filled with solids removed from the sump. Minor visual signs of contamination (staining and sheen) were observed in the material containerized within the 55-gallon drums. While setting up for the pressure wash and rinse of the sump, Chow Engineering realized that the hose bib attachment to the fire hydrant, which is the only water source in the area, was custom built, as are all of the fire hydrants at Hunters Point. The standard size for a fire hydrant hose bib is 2 ½". Apparently all of the hydrants on Hunters Point are 3.0". Chow Engineering attempted to locate a 3.0" attachment at several nearby stores but could not do so. Cleanup activities at Building 302 A were halted at 1500 and will resume at 0600 tomorrow.

Field Activities Performed by R&M: Oversight of Chow Engineering activities. During cleanup activities at Building 302 A, a large 2" thick steel insert, approximately 4.0' X 4.0' X 3.0' was discovered inside the concrete sump vault. This steel insert is suspended in water and/or product located between the insert and the bottom of the concrete vault. R&M could not determine the distance between the bottom of the insert and the bottom of the vault. However, the nature of the suspended steel insert suggests that there is a minimum of 1.0 foot between the two.

A total of 20 photographs were taken of site conditions, cleanup activities, the steel insert, containerized solids generated, and site safety measures. Six of these photographs are attached.

Observations: The aforementioned steel insert located inside the concrete vault is essentially floating on water and what can be assumed to be product. In order to allow proper cleanup of the

vault and inspection of the concrete surface for evidence of deterioration (cracks, holes, etc.), it is necessary to remove the steel insert beneath the sump at Building 302A. Removal of the insert also eliminates the need to drill through the insert to collect soil samples from beneath the concrete vault floor. With contaminated liquid present in the vault beneath the steel insert, such drilling can potentially cause release of liquid from the sump into the subsurface and possible contamination of the soil samples. The following steps are recommended:

- Remove the steel insert from the sump vault and clean thoroughly by pressure washing and rinsing
- Remove the water and sludge that is currently contained within the sump vault beneath the steel insert
- Thoroughly clean the concrete sump vault by pressure wash and rinse
- Inspect the concrete vault for holes and/or cracks
- Core through the concrete sump vault and collect the soil sample at the desired interval.
- Grout the borehole
- Place the steel insert back in the vault, if required

Employee's Signature:_____ David Harp **Date:** _____

R&M Oversight Report No. 2
CTO 005: Oversight of Sump, Floor Drain, Floor Vaults, and False Floor Cleanout
Hunters Point

Date: 4/26/00
Weather/Temp: Sunny, Warm, 75^0
Client: TtEMI/Navy
R&M Personnel Onsite: D. Harp
Other Personnel Onsite: TtEMI (Scott Wald), Chow Engineering (Lance Naterman, Bruce Calrk, Tony ...)
Oversight time: 0600-2100
Equipment used: Pressure washer, MILWAUKEE 8912 wet/dry vacuum, GENERAL FP-1 pipe fodder and 55-gallon drums
R&M Equipment used: Digital camera
Location of Field Activities: Sump located outside of Building 302A and 5 floor drains located inside Building 274.

Summary of Field Activities: R&M arrived onsite and met Chow Engineering at the sump location at Building 302A. Chow Engineering held a tailgate health and safety meeting in which site hazards were discussed. The oversight of field activities began at 6:00 a.m. and was completed at 9:00 p.m. (a 15-hour workday).

Completing Cleanup Work at Building 302A

At approximately 0700 cleanup work at Building 302A (see R&M Oversight Report for 04/25/00) was resumed. The steel insert and the concrete vault were pressure washed and rinsed "Simple Green" cleaning solution (Photo 1) and a long-handle whiskbroom were used to scrub the sides and bottom of the sump. A high-powered pressure washer (Photo 2) was used to remove all of the loosened debris, soil and any other material clinging to the walls of the sump (Photo 3). Once the bottom of the steel insert inside the sump contained enough rinse water, a MILWAUKEE 8912 wet/dry vacuum was used to remove the rinse water from the sump (Photo 4). This process was repeated a total of 4 times. All wash and rinse water generated during cleanout activities was contained within one 55-gallon, labeled drum (Photo 5). No cracks or holes were observed within the steel insert. After cleanout activities were completed, Chow Engineering properly labeled the (6) 55-gallon drums and secured the site with caution tape and orange safety cones.

Floor Drain Cleanout at Building 274

At approximately 0900 hours Chow Engineering moved and setup equipment at Building 274 to perform cleanout of the 5 floor drains (FD) and to determine the drainage direction and discharge location of these drains. The lids that covered the floor drains were removed and each drain hole was sucked with the wet/dry vacuum to remove any loose or free-floating particulates that might have been inside the floor drains. At approximately 1100, Chow Engineering received word that the pipe-rodder had arrived at their main office in Oakland. Chow left the site and returned with the rodder at 1230. Upon opening the pipe rodder box, Chow noticed that two pipe rodder fittings essential to cleanup activities were missing. Chow left the site at 1330 to locate the

missing fittings. At approximately 1500 hours Chow returned without the proper fittings but had located them. Again, Chow left the site to retrieve the missing part. At approximately 1630 Chow returned with the proper fittings and began setup for pipe flushing. The water source used for the floor drain flushing was an old fire hydrant located southwest of Building 274. Upon inspection it was discovered that this fire hydrant was a 2 ½" standard fire hydrant and not a custom 3.0 " hydrant like the one encountered the day before. It was then discovered that this particular hydrant was no longer functional. At approximately 1800 hour, Chow Engineering located pressurized flowing water outside of a nearby building and began the floor drain cleanout.

FD-01, located in the northwest section of Building 274 was cleaned first (Photo 6). A GENERAL FP-1 pressurized Pipe Rodder was used to flush water and debris from the drain line. It was discovered that this floor drain line fed a perpendicular drain line that ran northwest to southeast along the north side of the building. This line feeds a north trending drain line that empties into the Oil Water Separator located near the northwest corner of Building 274 (Photo 7). Waters entering the Oil Water Seperator are then diverted to a drain line that feeds the main sewer drain located north and slightly west of the northwest corner of Building 274 (Photo 8). R&M visually and photographically verified this drainage direction and discharge location.

At approximately 1930, the cleanout of FD-02 was initiated. There are 4 parallel floor drains located at FD –02 which are oriented northwest to southeast. R&M designated location numbers for each individual floor drain as follows:

NW ← ◙ ◙ ◙ ◙ → SW
A B C D

FD-02C was the first floor drain that was flushed and cleaned with the pipe rodder (Photo 9). With considerable effort the pipe rodder was advanced deep into the drain line and flushed with water. FD-02A, FD-02B, and FD-02D were flushed with the pipe rodder and achieved moderate penetration, until an unknown obstruction was encountered. Water was free flowing down each of the aforementioned floor drains indicating that the obstruction was not blocking water flow. Chow Engineering and R&M concluded that the floor drains at FD-02 were constructed with a "P Trap" beneath the drain or a safety screen, which was causing the pipe rodder obstruction. Water was flushed down the floor drains at FD-02 and was observed entering the same main sewer drain as FD-01. This observation suggests the following:

1) The (4) floor drains at FD-02 feed a single drain line that terminates near the southeast corner of Building 274
2) From this terminus, all waters are directed to the northwest and discharge directly into the main sewer drain (same as FD-01) located north and slightly west of the northwest corner of Building 274
3) FD-01 and FD-02 have the same drainage direction and discharge location.

At approximately 2010, a dye test was performed on the drain lines at Building 274 (Photo 10). BRIGHT DYES fluorescent green liquid concentrate was administered to the floor drains. The assumptions made regarding the drainage pattern were proven correct. R&M visually and photographically witnessed this drainage direction and discharge location (Photo 11 and 12).

Field Activities Performed by R&M: Oversight of all field activities.

A total of 34 photographs were taken of site conditions, pressure washing, cleanout, and pipe-flushing activities, dye testing, properly labeled containerized solids generated during cleanup activities, and site safety measures.

Summary of Observations at Building 274

The dye test results confirm the drainage direction and discharge location for all (5) floor drains at Building 274. However, some minor residual debris may still be present within the floor drain lines, particularly in FD-02A, FD-02B, and FD-02D. The obstruction encountered within these lines is still undetermined, but obviously does not hinder the flow of water. Commonly, floor drains as well as toilets and sinks are constructed with "P traps" in the piping. This serves as a safety mechanism to collect or trap debris that makes its way into the lines before reaching an inaccessible area. The other possibility is that the floor drains could have a wire mesh or screen below the drain to serve the same purpose. In any case, R&M is confident that the objective of the task has been satisfied. The drainage direction and discharge location have been delineated. The (4) drain lines at FD-02 all share the same drain line. Additionally, all (5) drain lines discharge into the same main sewer line.

Employee's Signature:_____ David Harp **Date:** _____

R&M Oversight Report No. 3
CTO 005: Oversight of Sump, Floor Drain, Floor Vaults, and False Floor Cleanout
Hunters Point

Date: 4/27/00
Weather/Temp: Morning fog, warm, 65^0
Client: TtEMI/Navy
R&M Personnel Onsite: D. Harp
Other Personnel Onsite: Chow Engineering (Lance Naterman)
Oversight time: 0700-0900
Equipment used: Drum dolly, safety cones, and caution tape
R&M Equipment used: Digital camera
Location of Field Activities: Sump located outside of Building 302A

Summary of Field Activities: R&M oversight representative met Chow Engineering field staff at the sump location at Building 302A. Following a tailgate health and safety meeting, at approximately 0700 Chow Engineering began loading the 55-gallon drums generated from cleanup activities during the previous two days onto their flatbed truck. Chow requested R&M to contact TtEMI and request permission to stage the 55-gallon drums at the Building 302A sump work site until the steel insert is removed and cleaned and additional drums are filled. R&M contacted Scott Wald of TtEMI by telephone and was granted approval for this. Chow Engineering proceeded to stage the drums inside the building directly north of the sump (Photo 1) until cleanout activities are completed next week. The sump was properly barricaded with traffic cones and lined with caution tape (Photo 2).

Field Activities Performed by R&M: Oversight of field activities.

A total of 2 photographs were taken of staged drums and site safety measures.

Observations: None

Employee's Signature:_____ David Harp **Date:** _____

R&M Environmental and Infrastructure Engineering, Inc.

Memo

To: Mike Wanta, Scott Wald (TtEMI)

From: Gavan Heinrich

CC: Ron Matsui (AMC), Thomas McArdle (AMC), Jody (Owens Concrete Saw and Company), Paul Jones (Fast-Tek), Masood Ghassemi (R&M)

Date: 5/19/00

Re: Soil borings and sampling adjacent to the transformer in Bldg 306

Following is a summary of the planned activities, schedule, and assigned responsibilities for soil sampling adjacent to the transformer in Building 306 at Hunters Point Naval Shipyard. I will be onsite for all concrete coring and soil boring activities and will be collecting and shipping the samples.

1. Subtronic Corporation, an underground utility locator, cleared the primary and alternate soil boring locations on Wednesday, May 17. Photos 1 and 2 show the locations of the proposed coreholes and soil borings

2. Owens Concrete Saw & Co., Inc. will perform the concrete coring at building 306. The concrete corer will arrive onsite at 9:30 p.m. on Friday, May 19.

3. Thomas McArdle of Astoria Metal Co. (AMC) will arrive at Building 306 at 10:00 p.m., May 19 and will de-energize the transformer from inside the building. Once the transformer is shut down, concrete coring will begin. Coring of the concrete pad is expected to take from two to three hours per core hole, depending on the thickness of the pad and the presence or absence of steel reinforcement.

4. Fas-Tek will be on site at about 4:00 a.m. on Saturday, May 20 to advance the soil borings. The boreholes will be advanced through the concrete coreholes unless the concrete corer has encountered refusal. If the concrete corer is unable to penetrate the concrete pad, the boreholes will be advanced at the alternate locations approximately five feet southwest of the desired locations. Photos 3 and 4 show the alternate borehole locations.

5. Soil boring and sample collection should be completed by 7.00 a.m. Saturday morning, at which time Mr. Thomas McArdle of AMC will return to Building 306 and re-energize the transformer.

6. Samples will be shipped to APCL Saturday morning immediately following soil boring and sample collection activities.

Photo 1. View of IR35B026 soil boring location looking northwest

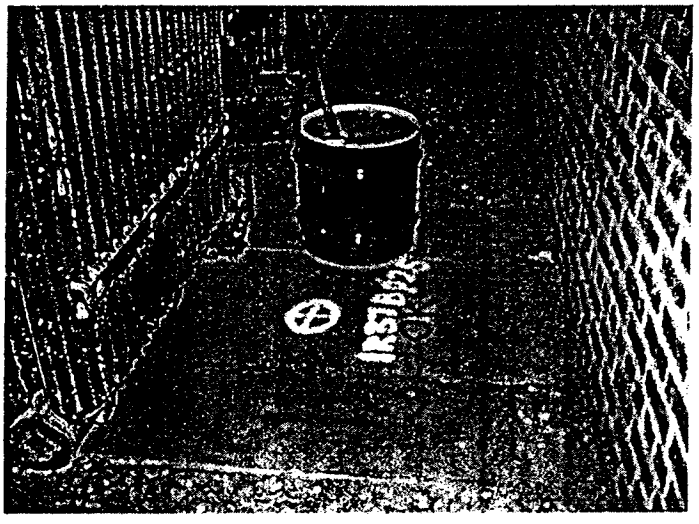


Photo 2. View of IR35B025 soil boring location looking northwest

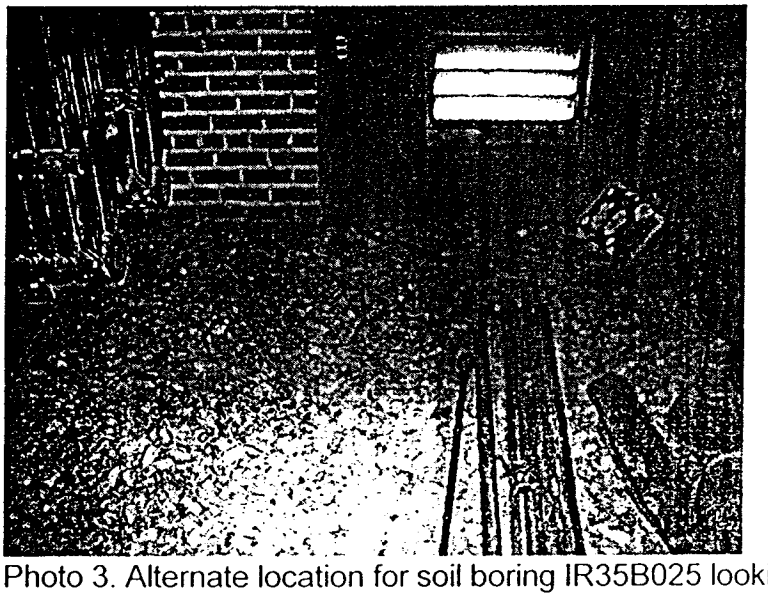


Photo 3. Alternate location for soil boring IR35B025 looking northeast

Photo 4. Alternate location for soil boring IR35B026 looking northwest

CTO-005A
Report on
Soil Sampling at Buildings 306, 274, and 302 and IR37
Hunters Point Naval Shipyard

Date: 5/22/00
Client: TtEMI/Navy
Report Prepared by: David Harp and Gavan Heinrich (R&M Environemntal)

Building 306

Soil sampling at Building 306 is now complete. R&M met with Owens Concrete Saw &Co (Owens CSC) and Mr. Thomas McArdle of Astoria Metal Co. (AMC) at approximately 10:00 p.m. on 5/19/00 at building 306. Mr. McArdle disconnected the power to the transformer and Owens CSC began work immediately on the concrete coring. It was believed that the concrete under the transformer could be up to 4 feet thick so Owen CSC intended to run two corers simultaneously so that the work would be completed by the time the Geoprobe contractor arrived at abut 4:00 a.m. on 5/20/00). After setting both corers in position (Photo 1), the concrete coring crew started the corer setup on the IR35B026 borehole location and within the five minutes penetrated the concrete slab, which turned out to be only 7" thick (Photo 1). The slab at the opposite end of the transformer (IR35BO25) was only 5" thick and was rapidly penetrated as well. It appears that the actual footings for the transformer are only 18" wide, and that a thinner slab of concrete had been poured in the area between the footings, where the boreholes are located, sometime after the transformer was already in place.

Fast-Tek, the Geoprobe/soil-boring subcontractor arrived at 4:00 a.m. on 5/20/00 and set up a limited access Geoprobe rig to advance the soil borings. The IR35B025 borehole was advanced first (Photo 2). Based on the rate of penetration the gravel was estimated to be approximately 6.5 feet thick. The Geoprobe encountered difficulty, however, when trying to collect a soil sample below the gravel/soil interface. During a number of sample collection attempts, the narrow sample collection sleeve (1") of the limited access Geoprobe rig became jammed with the coarse gravel before sufficient soil had entered the tube. R&M and Fast-Tek resolved this by advancing the boring as near to the gravel/soil interface as possible before opening the sample collection tube. A sample (0020G001) was collected from 6" to 12" below the gravel/soil interface, placed in an 8-oz. glass jar, and then placed on ice. Borehole IR35B026 also presented difficulties. The soil gravel interface in IR35B026 was at approximately 6 feet bgs, but the Geoprobe encountered refusal repeatedly at 6.75-ft bgs. The obstruction was concrete and was most likely over pour from the nearby transformer footing. In order collect enough sample, R&M advanced the Geoprobe twice, collected two samples from 6" to 9" below the gravel-soil interface, and then composited the two samples. The sample was placed in an 8-oz. glass jar, and then placed on ice. The grouting of the boreholes has been placed on hold, pending availability of the soil sampling results, which may indicate a need for additional sampling at the same or nearby locations. As a temporary measure, the concrete cores were wrapped in the plastic sheeting and placed back in the core holes. Mr. McArdle returned to the site at approximately 8:00 a. m. on 5/20/00 and restored power to the transformer. The were samples packed in an ice cooler with 18 pounds of double-bagged ice and shipped to APCL laboratories on Saturday morning (5/20/00).

Building 274

R&M met with Osborne Concrete Coring on 5/02/00 where five 6" cores were cut through the concrete flooring located adjacent to the floor drains within the building (Photo 4) before any borings were advanced. Samples were collected on 5/09/00 when Fast-Tek Drilling Company advanced borings (IR35B020-IR35B024) through these cored areas to an approximate depth of 3.0 feet bgs. Samples were collected in glass jars and 5-gram Encore samplers and core holes were then grouted with Portland Type II cement. Recovery was relatively poor during sample collection as the ground beneath the foundation was extremely hard. No other complications were encountered.

Building 302

Soil sampling was completed adjacent to the sump vault at Building 302 on May 9, 2000. One boring (IR33B109) was advanced with a Geoprobe to a depth of approximately 7.0 feet below ground surface. Samples were collected in glass jars and Encore samplers to encapsulate the volatiles. After sample collection the boring was grouted with Portland Type II cement.

IR 37

On May 09, 2000, R&M met with Fast-Tek and proceeded to advance two borings (IR37B026 and IR37B027) beneath an old exploratory excavation at IR 37 (Photo 5) to a depth of approximately 6.0 to 6.5 feet bgs. No problems were encountered. Samples were collected in glass jars and 5-gram Encore samplers. The borings were then grouted with Portland Type II cement.

Photos:

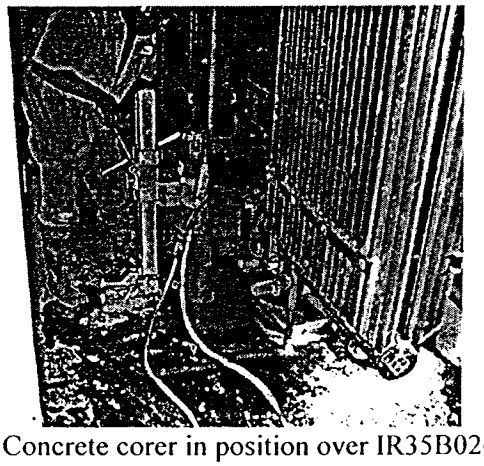


Photo 1. Concrete corer in position over IR35B026 location

Photo 2. Completion of IR35B026 corehole

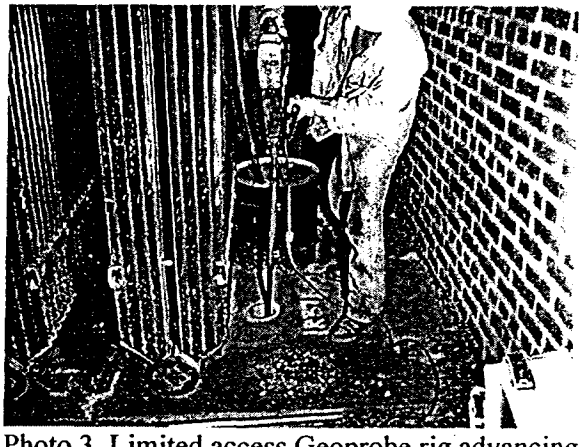


Photo 3. Limited access Geoprobe rig advancing IR35B025

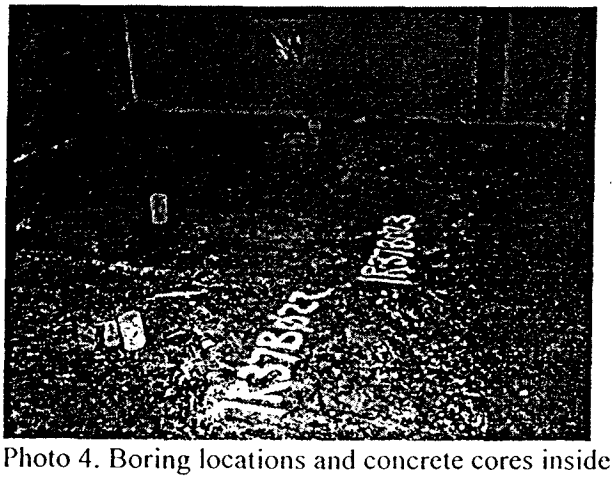


Photo 4. Boring locations and concrete cores inside Building 274

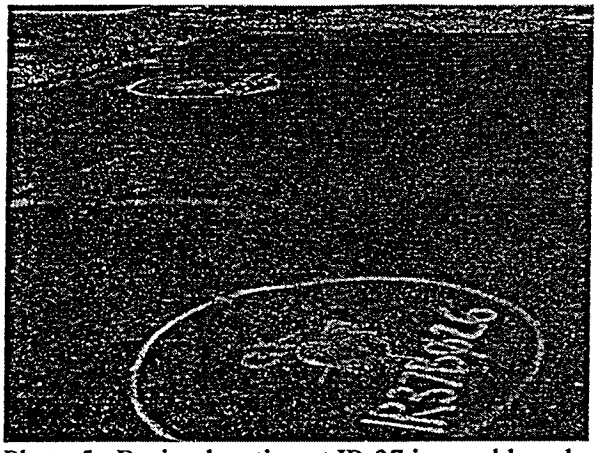
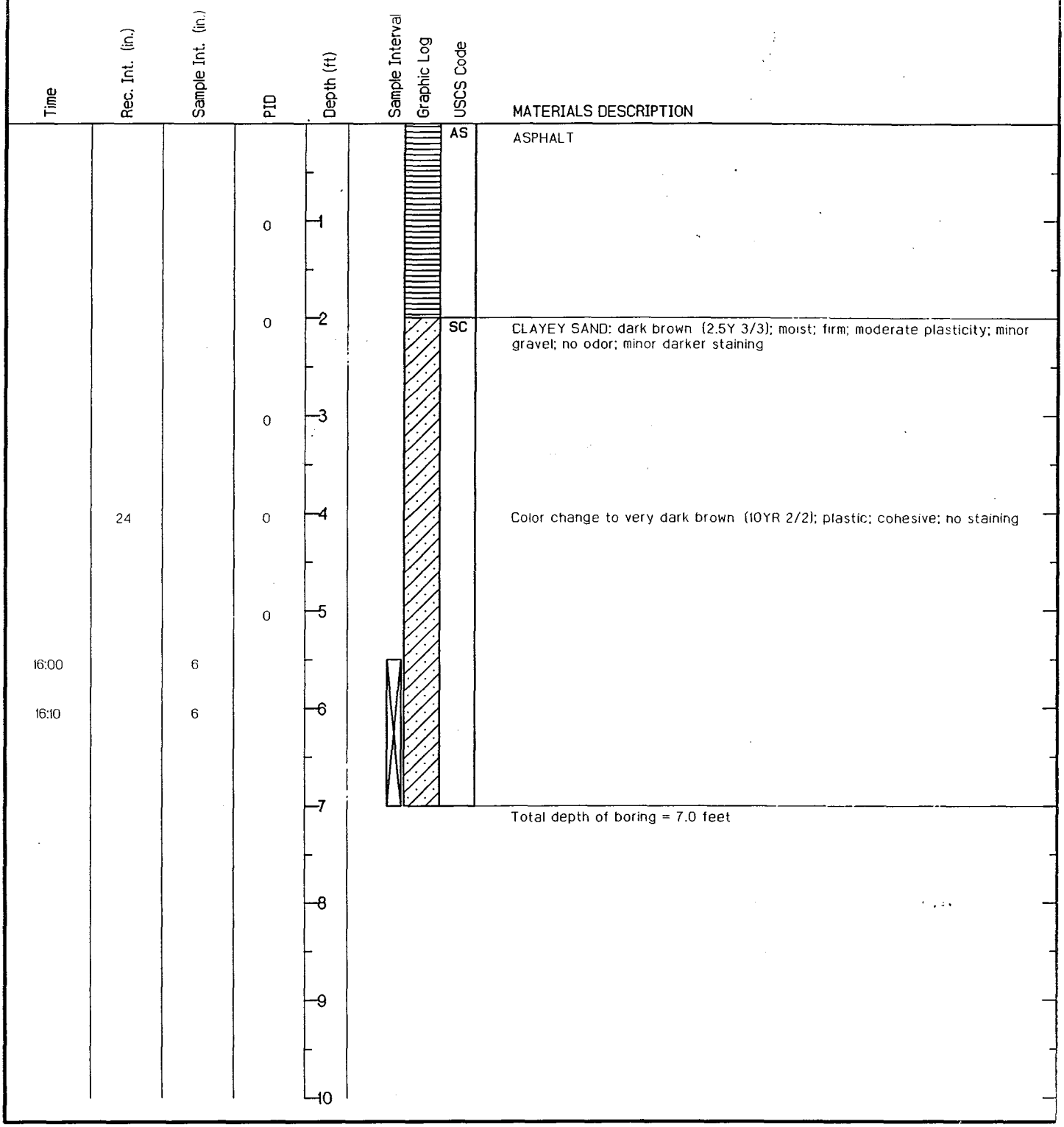


Photo 5. Boring location at IR-37 in an old exploratory excavation

Tt Tetra Tech EM Inc.

LOG OF BORING IR33B109



▼ Water Table

☒ Lab Sample

PROJECT	Hunter's Point	**SAMPLING METHOD**	Geoprobe
LOCATION	IR-33 Sump Bldg #302A	**GROUND ELEVATION**	NA
JOB NUMBER	CTO-005A	**TOC ELEVATION**	NA
LOGGED BY	D. Harp	**BORING DIAMETER**	1.5 Inches
DATE DRILLED	5/9/00	**TOTAL DEPTH OF HOLE**	7.0 Feet bgs
DRILLER	Fast-Tek	**WATER LEVEL**	None Encountered
DRILL METHOD	Geoprobe	**WELL INSTALLED? (Y/N)**	N

IR-33S

DRAFT FINAL
PARCEL D
RISK MANAGEMENT REVIEW PROCESS

DATED 20 JUNE 2000

LIST OF CONTENTS: IR-33S

SITE IR-33 SOUTH: REMEDIAL AREAS 33S-1 AND 33S-2 (GRID CELL AV25)

Operational History and Site Characterization

Remedial areas 33S-1 and 33S-2 are located inside Building 411, adjacent to floor sumps associated with fixed machinery. The Navy used Building 411 for machining and welding operations. The foundation of Building 411 consists of the following: (1) an 8- to 18-inch-thick, steel-reinforced concrete slab; (2) steel-reinforced concrete and wood composite pilings (spaced an average of 8 feet on center in a grid pattern underneath the concrete slab); and (3) more than 150 steel-reinforced concrete pile caps, each with an average of 12 to 20 supporting steel-reinforced concrete/wood composite pilings (spaced an average of 3 feet on center). Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (the City) is proposing that the area be zoned for industrial use, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area. Based on a review of the data, the Navy believes the area is adequately characterized for remedial investigation and feasibility study (RI/FS) purposes.

Data Evaluation and Risk Assessment

Remedial area 33S-1 is a 35- by 35-foot area located in grid cell AV25. Remedial area 33S-2 is a 35- by 80-foot area also located in grid cell AV25. Under an industrial reuse scenario, grid cell AV25 has an estimated excess lifetime cancer risk (ELCR) of 1×10^{-5} and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Because the ELCR exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AV25. Chemicals driving risk (Aroclor-1254, arsenic, and benzo[a]pyrene) were detected in borings IR33B092, IR33B094, and PA33B053. These chemicals are bounded spatially (with decreasing trends) by borings IR09MW44A, IR09P042A, IR09P043A, and PA33SS52, as shown on Figure 1.

Remedial Areas 33S-1 and 33S-2 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1254	0.68 at 9.75 feet	4×10^{-6}	<1
Arsenic	11.3 at 6.75 feet	4×10^{-6}	<1
Benzo(a)pyrene	0.19 at 4.50 feet	2×10^{-6}	<1

Risk Management Factors

The maximum concentrations of the chemicals driving risk are below current screening criteria. The maximum concentration of Aroclor-1254 (0.68 mg/kg) is below both U.S. Environmental Protection

Agency (EPA) guidance for industrial cleanup for total polychlorinated biphenyls (PCB) (10 mg/kg), and the 1998 industrial preliminary remediation goal (PRG) for total PCBs (1.3 mg/kg). The maximum concentration of arsenic (11.3 mg/kg) is consistent with variations in ambient concentrations. The maximum benzo(a)pyrene concentration (0.19 mg/kg) is below the 1995 and 1998 industrial PRGs (0.26 and 0.36 mg/kg, respectively). It is considered unlikely that the general population could be exposed to soils beneath Building 411; as there are no plans to penetrate, remove, or otherwise compromise the integrity of the existing flooring and foundation.

Groundwater Issues

At remedial areas 33S-1 and 33S-2, groundwater is encountered at about 8 to 10 feet bgs. The risk management review (RMR) did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

Total petroleum hydrocarbons (TPH) as diesel (TPH-d) and total oil and grease were detected at a maximum concentration of 1,500 and 12,000 mg/kg, respectively. Twelve sumps, 12 floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to Tetra Tech EM Inc.'s (TtEMI) "Program Waste Management Plan for Invesigation-Derived Wastes" (PRC Environmental Management, Inc. [PRC] 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were Resource Conservation and Recovery Act (RCRA) clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

✓ The Navy concluded that no Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response action is required for remedial areas 33S-1 and 33S-2. .

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33S	AV25, 1×10^{-5}	RA 33S-1 and RA 33S-2

Operational History	Remedial areas 33S-1 and 33S-2 are located inside Building 411, adjacent to floor sumps associated with fixed machinery. The Navy used Building 411 for machining and welding operations.
• Is the site adequately characterized?	Yes. Borings IR33B092 and IR33B094 are associated with remedial area 33S-1, while boring PA33B053 is associated with remedial area 33S-2. These areas are bounded spatially by borings IR09MW44A, IR09P042A, IR09P043A, and PA33SS52.
• Are the detected chemicals consistent with the operational history?	No. The maximum detected arsenic concentration (4×10^{-6}) of 11.3 mg/kg was detected at 6.75 feet bgs in boring PA33B094, and is consistent with variations in ambient levels (Hunters Point ambient level [HPAL] is 11.1 mg/kg). Yes. Aroclor-1254 (4×10^{-6}) was detected at 9.75 feet bgs in boring PA33B053. Benzo(a)pyrene (2×10^{-6}) was detected at depths of 1.25 and 4.5 feet bgs in IR33B092. Aroclor-1254 and benzo(a)pyrene may be attributed to releases from floor sumps associated with machinery.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No.
• How do these hot spots compare with the ambient values (metals and polynuclear aromatic hydrocarbons [PAH])?	N/A

Is Groundwater Contamination Present?	Yes. At remedial area 33S-1, TPH-d and TPH as motor oil (TPH-mo) were detected in groundwater from boring IR33B094. No groundwater samples were collected from boring PA33B053 at remedial area 33S-2. The surrounding groundwater data indicate the presence of metals, TPH-d, and TPH-mo.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	Yes. Metals exceeded screening criteria at boring IR33B094. No TPH was detected in this boring. Metals, semivolatile organic compounds (SVOC), and TPH-mo exceeded screening criteria at boring PA33B053.
• Has a potential source of the groundwater contamination been identified?	Yes. Metals may be attributed to fill material. No. The detection of TPH in soil is sporadic throughout IR-33S.

Has TPH been Detected over a Screening Criterion?	
• TPH as gasoline (TPH-g) > 100 parts per million (ppm)?	No.
• TPH-d > 1,000 ppm?	Yes. 1,500 mg/kg
• TPH-mo > 1,000 ppm?	No.
• Total recoverable petroleum hydrocarbons (TRPH) > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	Yes. 12,000 mg/kg.

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is covered with the concrete building foundation.
• PCBs greater than 10 ppm?	No. Aroclor-1254 was detected at a maximum concentration of 0.68 mg/kg, and Aroclor-1260 was detected at a maximum concentration of 0.08 mg/kg.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for remedial areas 33S-1 and 33S-2. Twelve sumps, 12 floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to TtEMI's "Program Waste Management Plan for Invesigation-Derived Wastes" (PRC 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were RCRA clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended.

SITE IR-33 SOUTH: REMEDIAL AREA 33S-3 (GRID CELL AW25)

Operational History and Site Characterization

Remedial area 33S-3 is located inside Building 411, adjacent to floor sumps associated with fixed machinery. The Navy used Building 411 for machining and welding operations. The foundation of Building 411 consists of the following: (1) an 8- to 18-inch-thick, steel-reinforced, concrete slab; (2) steel-reinforced, concrete and wood composite pilings (spaced an average of 8 feet on center in a grid pattern underneath the concrete slab); and (3) more than 150 steel-reinforced concrete pile caps, each with an average of 12 to 20 supporting steel-reinforced concrete and wood composite pilings (spaced an average of 3 feet on center). Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for industrial use, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area. Based on a review of the data, the Navy believes the area is adequately characterized for RI/FS purposes.

Data Evaluation and Risk Assessment

Remedial area 33S-3 is a 30- by 40-foot area located in grid cell AW25. Under an industrial reuse scenario, grid cell AW25 has an estimated ELCR of 2×10^{-6} and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AW25. Chemicals driving risk (benzo[a]anthracene and benzo[b]fluoranthene) were detected in boring IR33B096 and were bounded vertically; PAHs were not detected at 1.75 and 10.5 feet bgs in boring IR33B096. These chemicals were bound spatially (with decreasing trends) by borings IR33B100, PA33B055, PA33MW36A, and PA33MW37A, as shown on Figure 1.

Remedial Area 33S-3 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)anthracene	0.81 at 6.5 feet	7×10^{-7}	<1
Benzo(b)fluoranthene	1.0 at 6.5 feet	8×10^{-7}	<1

Risk Management Factors

The maximum concentrations of the chemicals driving risk are below current screening criteria. The maximum benzo(a)anthracene concentration (0.81 mg/kg) is below the 1995 and 1998 industrial PRGs (2.6 and 3.6 mg/kg, respectively). The maximum benzo(b)fluoranthene concentration (1.0 mg/kg) is

below the 1995 and 1998 industrial PRGs (2.6 and 3.6 mg/kg, respectively). In addition, the ELCR of grid cell AW25 is within the acceptable risk range because the planned reuse of the site is consistent with the historical industrial use of the site.

Groundwater Issues

At remedial area 33S-3, groundwater is encountered at about 8 to 10 feet bgs. The RMR did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

TPH-mo was detected at a maximum concentration of 1,300 mg/kg in soil. Twelve sumps, twelve floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to TtEMI's "Program Waste Management Plan for Invesigation –Derived Wastes" (PRC 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were RCRA clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

✓ The Navy concluded that no CERCLA response action is required for remedial area 33S-3.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33S	AW25, 2×10^{-6}	RA 33S-3

Operational History	Remedial area 33S-3 is located inside Building 411, adjacent to floor sumps associated with fixed machinery. The Navy used Building 411 for machining and welding operations.
• Is the site adequately characterized?	Yes. Remedial area 33S-3 is associated with boring IR33B096. Chemicals driving risk at boring IR33B096 are bounded vertically. Borings IR33B100, PA33B055, PA33MW36A, PA33MW37A bound this remedial area.
• Are the detected chemicals consistent with the operational history?	Yes. Benzo(a)anthracene (7×10^{-7}) and benzo(b)fluoranthene (8×10^{-7}) were detected at 6.5 feet bgs in boring IR33B096. Benzo(a)anthracene and benzo(b)fluoranthene may be attributed to releases from floor sumps associated with machinery.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	No groundwater sample is available from boring IR33B096. The surrounding groundwater data indicate the presence of metals and TPH.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	Yes. Metals, SVOCs, and TPH-mo in soil exceeded screening criteria at boring IR33B096.
• Has a potential source of the groundwater contamination been identified?	Yes. Metals may be attributed to fill material. No. TPH is detected sporadically throughout IR-33S.

Has TPH been Detected over a Screening Criterion?	
• TPH-g > 100 ppm?	No.
• TPH-d > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	Yes. 1,300 mg/kg
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is covered with the concrete building foundation.
• PCBs greater than 10 ppm?	No. PCBs were not detected in boring IR33B096.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for remedial area 33S-3. Twelve sumps, 12 floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to TtEMI's "Program Waste Management Plan for Invesigation–Derived Wastes" (PRC 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were RCRA clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended.

SITE IR-33 SOUTH: DE MINIMIS AREA 8169 (GRID CELL AW24)

Operational History and Site Characterization

De minimis area 8169 is located inside Building 411, in an area where surface staining was observed. The Navy used Building 411 for machining and welding operations. The foundation of Building 411 consists of the following: (1) an 8- to 18-inch-thick, steel-reinforced concrete slab; (2) steel-reinforced, concrete and wood composite piers (spaced an average of 8 feet on center in a grid pattern underneath the concrete slab); and (3) more than 150 steel-reinforced concrete footings, each with an average of 12 to 20 supporting steel-reinforced concrete and wood composite piers (spaced an average of 3 feet on center). Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for industrial use, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area. Based on a review of the data, the Navy believes the area is adequately characterized for RI/FS purposes.

Data Evaluation and Risk Assessment

De minimis area 8169 is an 8- by 8-foot area located in grid cell AW24 and associated with surface sample PA33SS57. Under an industrial reuse scenario, grid cell AW24 has an estimated ELCR of 1×10^{-6} and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. The ELCR of grid cell AW24 is 1×10^{-6}, which is within an acceptable risk range and further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AW24. No specific analyses were conducted for chromium VI; however, a surrogate chromium VI concentration was calculated based on the detected concentration of total chromium in boring PA33SS57. These chemicals are bounded spatially (with decreasing trends) by borings PA33B056 and IR33B095, as shown on Figure 1.

De Minimis Area 8169 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Chromium VI	10.5 at 5.25 feet (0.78% of total Cr)	1×10^{-6}	<1

Risk Management Factors

The maximum concentration of detected total chromium (1,352 mg/kg) is below the 1995 industrial PRG (1,580 mg/kg) but above the 1998 industrial PRG (450 mg/kg) and the sample-specific HPAL (1,161 mg/kg). The surrogate chromium VI concentration of 10.5 mg/kg (0.78 percent of the detected

total chromium concentration) is below the 1995 and 1998 industrial PRGs (230 and 64 mg/kg, respectively). In addition, no industrial sources of chromium VI have been identified at the site. The total chromium concentration was located below a concrete building foundation, at a depth of 5.25 feet bgs. The ELCR of grid cell AW24 is within the acceptable risk range because the planned reuse of the site is consistent with the historical industrial use of the site.

Groundwater Issues

At de minimis area 8169, groundwater is encountered at about 8 to 10 feet bgs. The RMR did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of the soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

Total oil and grease was detected at a maximum concentration of 2,200 mg/kg. Twelve sumps, 12 floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to TtEMI's "Program Waste Management Plan for Invesigation–Derived Wastes" (PRC 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were RCRA clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

✓ The Navy concluded that no CERCLA response action is required for de minimis area 8169.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-33S	AW24, 1×10^{-6}	DM 8169

Operational History	De minimis area 8169 is located inside Building 411, in an area where surface staining was observed. The Navy used Building 411 for machining and welding operations.
• Is the site adequately characterized?	Yes. De minimis area 8169 is associated with surface sample PA33SS57 collected from a stain on the floor. PA33B056 and boring IR33B095 bound this de minimis area.
• Are the detected chemicals consistent with the operational history?	No. Chromium was detected at a depth of 5.25 feet bgs in boring PA33SS57, and may be attributed to fill material. Chromium VI (1×10^{-6}) has been estimated based on the total chromium value, but there are no industrial sources of chromium VI at the site.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No. The surface sample was collected from beneath the surface of the concrete floor. No staining was observed during a recent site walk.
• How do these hot spots compare with the ambient values (metals and PAHs)?	N/A

Is Groundwater Contamination Present?	No groundwater sample is available from this surface sample location. The groundwater sample collected from boring IR33B095 indicated the presence of TPH-d and TPH-mo. This boring is located about 50 feet north of the surface sample location.
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	Yes. Total oil and grease exceeded screening criteria at borings PA33SS57.
• Has a potential source of the groundwater contamination been identified?	No.

Has TPH been Detected over a Screening Criterion?	
• TPH-g > 100 ppm?	No.
• TPH-d > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	Yes. 2,200 mg/kg

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is covered with the concrete building foundation.
• PCBs greater than 10 ppm?	No. PCBs were not detected in surface sample PA33SS57 or in adjacent boring PA33B056.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 8169. Twelve sumps, 12 floor vaults, and a false floor were cleaned out in May 2000. The material contained in the sumps, floor vaults, and false floor were contained, classified and disposed according to TtEMI's "Program Waste Management Plan for Invesigation–Derived Wastes" (PRC 1994). Exposed sumps, floor vaults, and false floor bottoms and sides were inspected and no indication of equipment or facility failure (including cracks, fractures, or volume loss) were noted. All sumps, floor vaults, and false floor were RCRA clean at the completion of scheduled on-site activities. No additional investigation of underlying soils or groundwater is recommended.

SUMMARY OF HUMAN HEALTH RISK AT PARCEL D UNDER 10^{-6} FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO (Continued)
PARCEL D, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

IR-Site	Grid Cell	Remedial or De Minimis Area	Chemical Risk Driver	95% UCL/ Risk	ELCR and HI Grid Value	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet bgs)	Detected Concentration (mg/kg)	1995 PRG (mg/kg)	1998 PRG (mg/kg)	HPAL (mg/kg)				
IR-33N	AT19	DM 7353	Chromium	1×10^{-6}	1×10^{-6}	IR33B105	7.25	1,720	1,600	450	1,664 (sample-specific)	Chromium source may be related to serpentine fill. TPH contamination from AST.	Asphalt	TRPH: 23,000 TPH-mo: 9,000	De minimis areas 7353 and 7453 are near the northeastern corner of Building 302. Building 302 was used as a transportation shop for the repair of automotive and locomotive equipment. These de minimis areas were excavated as part of the exploratory excavation, EE-12.
			Chromium VI (calculated based on chromium values)		HI < 1			13.4	230	64	NA				
		DM 7453	Lead			PA33SS11	0.00	1,800	1,000	1,000	8.99				
IR-33S	AV25	RA 33S-2	Aroclor-1254	4×10^{-6}	1×10^{-5}	PA33B053	9.75	0.68	0.34	1.3	NA	Suspected source of contamination is leaks of liquids from a nearby sump. Arsenic attributed to variations in background concentrations.	Concrete	TPH-d: 1,500	IR-33S covers about 6 acres and consists of Buildings 364, 365, 411, 417, 418, and 424. Remedial areas 33S-1 and 33S-2 are inside of Building 411, adjacent to floor sumps used to support fixed machinery. The Navy used Building 411 for machining and welding operations.
		RA 33S-1	Arsenic	4×10^{-6}	HI < 1	IR33B094	6.75	11	2.0	3.0	11.1				
		RA 33S-1	Benzo(a)pyrene	2×10^{-6}		IR33B092	4.50	0.19	0.26	0.36	NA				
		RA 33S-1	Benzo(a)pyrene			IR33B092	1.25	0.13	0.26	0.36	NA				
	AW25	RA 33S-3	Benzo(a)anthracene	7×10^{-7}	2×10^{-6}	IR33B096	6.50	0.81	2.6	3.6	NA	Unknown	Concrete	TPH-mo: 1,300	Remedial area 33S-3 is inside of Building 411, adjacent to floor sumps used to support fixed machinery. The Navy used Building 411 for machining and welding operations.
			Benzo(b)fluoranthene	8×10^{-7}	HI < 1	IR33B096	6.50	1.0	2.6	3.6	NA				
	AW24	DM 8169	Chromium	1×10^{-6}	1×10^{-6}	PA33SS57	5.25	1,352	1,600	450	1,161 (sample-specific)	Chromium source may be related to serpentine fill.	Concrete	TOG: 2,200	De minimis area 8169 is inside of Building 411, in an area were surface staining was observed. The Navy used Building 411 for machining and welding operations.
			Chromium VI (calculated based on chromium values)		HI < 1			10.5	230	64	NA				
IR-34 (IR-33N, IR-35)	AW20	DM 8258	Benzo(a)pyrene	2×10^{-6}	4×10^{-6}	IR34B023	1.25	0.27	0.26	0.36	NA	May be related to surface spillage of waste oil.	Asphalt	None exceeding the soil cleanup criteria.	IR-34 covers about 5 acres and consists of Buildings 351, 351A, and 366. De minimis area 8258 is about 25 feet from the northwestern corner of Building 366. Building 366 was a former boat and plastics shop which discharged paint and cleaning products containing epoxies, solvents, waste oil, and hydraulic fluid down drains. There was a battery storage area north of the building.
			Benzo(a)anthracene	6×10^{-7}	HI < 1	IR34B023	1.25	0.69	2.6	3.6	NA				
			Benzo(b)fluoranthene	4×10^{-7}		IR34B023	1.25	0.44	2.6	3.6	NA				
			Dibenzo(a,h)anthracene	4×10^{-7}		IR34B023	1.25	0.084	0.26	0.36	NA				
			Benzo(k)fluoranthene	3×10^{-7}		IR34B023	1.25	0.33	26	36	NA				
IR-35 (IR-22)	BA22	RA 35-1	Benzo(a)pyrene	8×10^{-6}	2×10^{-5}	IR35SS14	0.25	1.0	0.26	0.36	NA	Leaky transformer at Building 306. Potential surface spill of waste oil.	Asphalt in poor condition. Concrete floor located inside of Building 306.	None exceeding soil cleanup criteria.	IR-35 covers about 3.4 acres and consists of Buildings 274, 306, and 372. Remedial area 35-1 is north of Building 274. Building 274 was used as a former decontamination training facility. No records of radioactive materials or use of radioactive materials were found for Building 274. However, suspected sandblast abrasive is located outside of Building 274. De minimis area 9363 is located inside Building 306 near a leaking transformer. The area surrounding the transformer appears to be a gravel bed surrounded by concrete. Building 306 is an active electrical substation.
		RA 35-1	Benzo(a)pyrene	---	HI < 1	IR35SS15	0.25	0.49	0.26	0.36	NA				
		DM 9363	Aroclor-1260	5×10^{-5}		PA35SS06	0.75	0.95	0.34	1.3	NA				
		RA 35-1	Aroclor-1260	---		IR35SS14	0.25	0.51	0.34	1.3	NA				
		RA 35-1	Aroclor-1260	---		IR35SS15	0.25	0.31	0.34	1.3	NA				
		RA 35-1	Benzo(b)fluoranthene	2×10^{-6}		IR35SS14	0.25	2.2	2.6	3.6	NA				
		RA 35-1	Benzo(b)fluoranthene	---		IR35SS15	0.25	1.2	2.6	3.6	NA				
		RA 35-1	Benzo(a)anthracene	6×10^{-7}		IR35SS14	0.25	0.71	2.6	3.6	NA				
		RA 35-1	Benzo(k)fluoranthene	6×10^{-7}		IR22SS25	0.25	0.70	26	36	NA				
		RA 35-1	Indeno(1,2,3-cd)pyrene	5×10^{-7}		IR35SS14	0.25	0.57	2.6	3.6	NA				
IR-37	AR25	RA 37-1	Aroclor-1260	2×10^{-6}	4×10^{-6}	PA37SS09	0.75	0.26	0.34	1.3	NA	May be related to surface spillage of waste oil.	Asphalt	TOG: 29,000 TRPH: 6,350 TPH-mo: 2,700	IR-37 covers about 3 acres and consists of Buildings 410, 423, 435, 436, and 437, and former USTs S-435(1) and S-435(2). The 750-gallon steel solvent USTs were removed in August 1991. Soils excavated from around the USTs were disposed of at a Class I landfill facility. Remedial area 37-1 is between Buildings 436 and 437. Building 436 was used by the Navy as a painting and paint storage facility. Building 437 is a wood and tin shed with an exposed soil floor. This building was used as a pipe storage facility. This remedial area was excavated as part of the exploratory excavation EE-14.
			Aroclor-1260	---	HI < 1	IR37B017	0.75	0.46	0.34	1.3	NA				
			Benzo(a)pyrene	1×10^{-6}		IR37B015	1.25	0.12	0.26	0.36	NA				
			Benzo(b)fluoranthene	2×10^{-7}		IR37B015	1.25	0.25	2.6	3.6	NA				
			Benzo(a)anthracene	1×10^{-7}		IR37B015	1.25	0.15	2.6	3.6	NA				

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S (IR-33N)	AU21 (074059, 075060, 076059)	1E-06 (9E-08)	Chromium VI (1E-06)	12	NE	NE	NE
IR-33S (IR-09, IR-33N)	AU22 (074064, 075063, 075064, 076063, 076064)	4E-07 (6E-08)	Beryllium (4E-07)	0.39	IR09B032	2.75	0.72 α
			Beryllium	--	IR09B032	1.75	0.60
			Beryllium	--	IR09B032	9.75	0.53
			Beryllium	--	PA33B040	2.25	0.44
			Beryllium	--	PA33B040	6.75	0.43
			Beryllium	--	PA33B039	6.75	0.25
			Beryllium	--	PA33B039	2.25	0.22
			Beryllium	--	IR33B067	0.25	0.11
			Benzo(b)fluoranthene (3E-08)	0.039	IR09B032	1.75	0.04
IR-33S (IR-09)	AU24 (074068, 074070, 075069, 075070, 076069)	6E-07 (1E-07)	Beryllium (6E-07)	0.65	IR09B023	0.75	0.99 α
			Beryllium	--	IR09B024	5.25	0.90 α
			Beryllium	--	IR09B021	5.75	0.68
			Beryllium	--	IR09MW35A	1.25	0.68
			Beryllium	--	IR09B023	5.75	0.59
			Beryllium	--	IR09MW35A	5.25	0.53
			Beryllium	--	IR09MW35A	2.25	0.40
			Beryllium	--	IR09B023	3.25	0.23
			Benzo(b)fluoranthene (4E-08)	0.050	IR09MW35A	2.25	0.05
			Benzo(b)fluoranthene	--	IR09MW35A	5.25	0.04

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-33S (IR-09)	AU24 (074068, 074070, 075069, 075070, 076069) (Continued)	6E-07 (1E-07)	Chromium VI (8E-09)	0.076	IR09B023	3.25	0.35	
			Chromium VI	--	IR09B023	5.75	0.19	
			Chromium VI	--	IR09B024	3.25	0.082	
			Chromium VI	--	IR09B023	0.75	0.076	
			Chrysene (6E-09)	0.071	IR09MW35A	5.25	0.07	
			Chrysene	--	IR09MW35A	2.25	0.05	
IR-33S (IR-34)	AV22 (077064, 078062, 079062, 079064)	4E-07 (6E-08)	Beryllium (4E-07)	0.40	PA33B038	6.75	0.73	α
			Beryllium	--	IR34B017	1.25	0.50	
			Beryllium	--	IR34B033	6.25	0.43	
			Beryllium	--	IR34B018	7.25	0.29	
			Beryllium	--	PA33B038	2.25	0.26	
			Beryllium	--	IR34B018	1.25	0.21	
IR-33S	AV25 (077072, 078072, 079072)	1E-05 (9E-07)	Arsenic (4E-06)	9.4	IR33B094	6.75	11.3	•,α
			Arsenic	--	IR33B094	9.75	5.7	•
			Arsenic	--	PA33SS52	4.50	5.3	•
			Arsenic	--	PA33B053	9.75	2.9	•
			Arsenic	--	IR33B092	1.25	2.5	•
			Arsenic	--	IR33B092	4.50	2.5	•
			Arsenic	--	IR33B094	1.25	2.5	•
			Aroclor-1254 (4E-06)	0.68	PA33B053	9.75	0.7	
			Benzo(a)pyrene (2E-06)	0.19	IR33B092	4.50	0.2	
			Benzo(a)pyrene	--	IR33B092	1.25	0.1	

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S	AV25 (077072, 078072, 079072) (Continued)	1E-05 (9E-07)	Aroclor-1260 (4E-07)	0.079	IR33B092	1.25	0.08
			Aroclor-1260	--	IR33B092	4.50	0.06
			Benzo(b)fluoranthene (3E-07)	0.32	IR33B092	4.50	0.3
			Benzo(b)fluoranthene	--	IR33B092	1.25	0.2
			Benzo(a)anthracene (2E-07)	0.20	IR33B092	4.50	0.2
			Benzo(a)anthracene	--	IR33B092	1.25	0.1
			Indeno(1,2,3-cd)pyrene (9E-08)	0.11	IR33B092	4.50	0.1
			Indeno(1,2,3-cd)pyrene	--	IR33B092	1.25	0.08
			Chromium VI (9E-08)	0.89	NE	NE	NE
			Benzo(k)fluoranthene (8E-08)	0.10	IR33B092	4.50	0.1
			Chrysene (3E-08)	0.35	IR33B092	4.50	0.4
			Chrysene	--	IR33B092	1.25	0.2
			4,4'-DDT (9E-10)	0.0075	IR33B092	1.25	0.008
			4,4'-DDT	--	IR33B092	4.50	0.005
			4,4'-DDD (4E-10)	0.0042	IR33B092	4.50	0.004
IR-33S (IR-66, IR-67)	AV26 (079074)	NC	NE	NE	NE	NE	NE
IR-33S (IR-34)	AW22 (081064, 082063)	NC	NE	NE	NE	NE	NE
IR-33S (IR-34)	AW23 (081065)	5E-07 (6E-08)	Aroclor-1260 (5E-07)	0.10	PA34SS14	1.25	0.1

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S	AW24 (081069, 081070, 082069)	1E-06 (2E-07)	Chromium VI (1E-06)	11	NE	NE	NE
IR-33S	AW25 (081073)	2E-06 (2E-07)	Benzo(b)fluoranthene (8E-07)	1.0	IR33B096	6.50	1
			Benzo(a)anthracene (7E-07)	0.81	IR33B096	6.50	0.8
			Chromium VI (1E-07)	1.1	NE	NE	NE
			Chrysene (8E-08)	0.95	IR33B096	6.50	1
			Cadmium (4E-09)	5.3	IR33B096	1.75	5.3 α
			Cadmium	--	IR33B096	6.50	4.0 α
IR-33S (IR-67)	AW26 (081076, 082075)	2E-10 (2E-11)	Trichloroethene (2E-10)	0.0020	PA50TA11	6.25	0.002
IR-33S (IR-34)	AX23 (083065)	NC	NE	NE	NE	NE	NE
IR-33S (IR-34)	AX24 (084069, 085069)	4E-09 (1E-10)	Trichloroethene (4E-09)	0.036	PA33B035	2.25	0.04
IR-33S	AX25 (083071, 084071)	NC	NE	NE	NE	NE	NE

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S (IR-44, IR-67)	AX27 (085079)	NC	NE	NE	NE	NE	NE
IR-33S (IR-34, IR-65)	AY23 (087067, 088066)	2E-06 (1E-07)	Aroclor-1260 (1E-06)	0.25	IR65B001	0.75	0.3
			Aroclor-1260	--	IR65B004	1.00	0.07
			Arsenic (5E-07)	1.2	IR65B004	1.00	47.2 •,α
			Arsenic	--	IR65B002	3.00	2.0
			Arsenic	--	IR65B003	5.00	1.8
			Arsenic	--	IR65B005	5.00	1.2
			Arsenic	--	PA33B051	7.25	1.0
			Arsenic	--	IR65B002	5.00	0.75
			Arsenic	--	IR65B005	3.00	0.68
			Arsenic	--	IR65B004	5.00	0.50
			Arsenic	--	IR65B004	3.00	0.48
			Arsenic	--	IR65B003	1.00	0.46
			Arsenic	--	IR65B005	1.00	0.45
			Chrysene (2E-08)	0.28	IR65B001	0.75	0.3
			4,4'-DDD (4E-09)	0.049	IR65B001	0.75	0.05
			4,4'-DDE (2E-09)	0.019	IR65B001	0.75	0.02
IR-33S (IR-34, IR-71)	AY24 (087069)	1E-07 (1E-08)	Aroclor-1260 (1E-07)	0.022	IR33B117	0.75	0.02

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S	AY26	6E-06	Arsenic (6E-06)	15	IR50B020	6.25	15.2 •,α
(IR-44)	(086075,	(4E-07)	Arsenic	--	IR50B020	2.25	3.0 •
	086076,		Arsenic	--	IR50B021	2.75	3.0 •
	087076)		Arsenic	--	IR50B021	6.25	2.0
			Aroclor-1260 (8E-08)	0.015	IR50B020	2.25	0.02
			4,4'-DDT (5E-10)	0.0039	IR50B020	2.25	0.004
			Tetrachloroethene (4E-10)	0.0030	IR50B020	2.25	0.003
IR-34	AV21	5E-10	4,4'-DDT (5E-11)	0.00043	PA34B006	6.75	0.0001
(IR-33N)	(079061)	(7E-11)	4,4'-DDT	--	PA34B006	2.25	0.0004
			Heptachlor (5E-10)	0.00023	PA34B006	2.25	0.0002
IR-34	AV22	4E-07	Beryllium (4E-07)	0.40	PA33B038	6.75	0.73 α
(IR-33S)	(077064,	(6E-08)	Beryllium	--	IR34B017	1.25	0.50
	078062,		Beryllium	--	IR34B033	6.25	0.43
	079062,		Beryllium	--	IR34B018	7.25	0.29
	079064)		Beryllium	--	PA33B038	2.25	0.26
			Beryllium	--	IR34B018	1.25	0.21
IR-34	AW20	4E-06	Benzo(a)pyrene (2E-06)	0.27	IR34B023	1.25	0.3
(IR-33N,	(080058,	(3E-07)	Benzo(a)anthracene (6E-07)	0.69	IR34B023	1.25	0.7
IR-35)	081058,		Dibenz(a,h)anthracene (4E-07)	0.084	IR34B023	1.25	0.08
	082058)		Benzo(b)fluoranthene (4E-07)	0.44	IR34B023	1.25	0.4
			Benzo(k)fluoranthene (3E-07)	0.33	IR34B023	1.25	0.3
			Indeno(1,2,3-cd)pyrene (1E-07)	0.17	IR34B023	1.25	0.2
			Chrysene (5E-08)	0.60	IR34B023	1.25	0.6

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

HI	Hazard Index
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
NC	Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.
NE	Not evaluated
a	The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.
d	The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.
e	Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME
f	The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.
g	If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.
h	Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).
i	The central nervous sysstem is the primary system affected by the indicated chemical, generally at the lowest dose levels.
j	Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.
k	Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.
l	The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.
m	The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
n	The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
o	The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
p	The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
q	The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
*	The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).
α	The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

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TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR[d]	Total Segregated HI[e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33N (IR-33S)	AU21 (074059, 075060, 076059)	1×10^{-6} (9×10^{-6})	<1	Chromium VI (1×10^{-6})	12[i]	IR33B087[i]	1.25	1,500
IR-33N (IR-09, IR-33S)	AU22 (074064, 075063, 075064, 076063, 076064)	4×10^{-7} (6×10^{-8})	<1	NE	NE	NE	NE	NE
IR-33N	AV19 (077055, 078055, 079055)	2×10^{-9} (2×10^{-10})	<1	NE	NE	NE	NE	NE
IR-33N	AV20 (077056, 077057, 077058, 078056, 078057, 78058)	5×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (4×10^{-6}) Benzo(a)pyrene Benzo(a)anthracene (4×10^{-7}) Benzo(b)fluoranthene (3×10^{-7}) Benzo(b)fluoranthene	0.49 -- 0.48 0.34 --	IR33B091 IR33B069 IR33B069 IR33B091 IR33B069	1.25 6.25 6.25 1.25 6.25	0.49 # 0.33 # 0.48 0.34 0.23
IR-33N (IR-34)	AV21 (079061)	5×10^{-10} (7×10^{-11})	<1	NE	NE	NE	NE	NE
IR-33N (IR-34, IR-35)	AW20 (080058, 081058, 082058)	4×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (2×10^{-6}) Benzo(a)anthracene (6×10^{-7}) Benzo(b)fluoranthene (4×10^{-7}) Dibenzo(a,h)anthracene (4×10^{-7}) Benzo(k)fluoranthene (3×10^{-7})	0.27 0.69 0.44 0.084 0.33	IR34B023 IR34B023 IR34B023 IR34B023 IR34B023	1.25 1.25 1.25 1.25 1.25	0.27 # 0.69 0.44 0.084 0.33
IR-33S (IR-33N)	AU21 (074059, 075060, 076059)	1×10^{-6} (9×10^{-6})	<1	Chromium VI (1×10^{-6})	12[i]	IR33B087[i]	1.25	1,500

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR[d]	Total Segregated HI[e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S (IR-09, IR-33N)	AU22 (074064, 075063, 075064, 076063, 076064)	4×10^{-7} (6×10^{-6})	<1	NE	NE	NE	NE	NE
IR-33S (IR-09)	AU24 (074068, 074070, 075069, 075070)	6×10^{-7} (1×10^{-7})	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AV22 (077064, 078062, 079062, 079064)	4×10^{-7} (6×10^{-6})	<1	NE	NE	NE	NE	NE
IR-33S	AV25 (077072, 078072, 79072)	1×10^{-5} (9×10^{-7})	<1	Aroclor-1254 (4×10^{-6}) Arsenic (4×10^{-6}) Benzo(a)pyrene (2×10^{-6}) Benzo(a)pyrene	0.68 9.4 0.19 --	PA33B053 IR33B094 IR33B092 IR33B092	9.75 6.75 4.50 1.25	0.68 # 11 # 0.19 0.13
IR-33S (IR-66, IR-67)	AV26 (079074)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AW22 (081064, 082063)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AW23 (081065)	5×10^{-7} (6×10^{-6})	<1	NE	NE	NE	NE	NE
IR-33S	AW24 (080069, 081069, 082069)	1×10^{-6} (2×10^{-7})	<1	Chromium VI (1×10^{-6})	11[i]	PA33SS57	5.25	1,400

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S	AW25 (082073)	2×10^{-6} (2×10^{-7})	<1	Benzo(a)anthracene (7×10^{-7}) Benzo(b)fluoranthene (8×10^{-7})	0.81 1.00	IR33B096 IR33B096	6.50 6.50	0.81 1.0
IR-33S (IR-67)	AW26 (081076, 082075)	2×10^{-10} (2×10^{-11})	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AX23 (083065)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AX24 (084069, 085069)	4×10^{-9} (1×10^{-10})	<1	NE	NE	NE	NE	NE
IR-33S	AX25 (083071, 084071)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-44, IR-67)	AX27 (085079)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34, IR-65)	AY23 (087062, 088066)	2×10^{-6} (1×10^{-7})	<1	Aroclor-1260 (1×10^{-6}) Arsenic (5×10^{-7})	0.25 1.2	IR65B001 IR65B004	0.75 1.00	0.25 47 α, #
IR-33S (IR-34, IR-71)	AY24 (087069)	1×10^{-7} (1×10^{-8})	<1	NE	NE	NE	NE	NE
IR-33S (IR-44)	AY26 (086075, 086076, 087076)	6×10^{-6} (4×10^{-7})	<1	Arsenic (6×10^{-6})	15	IR50B020	6.25	15 α, #
IR-34 (IR-33N)	AV21 (079061)	5×10^{-10} (7×10^{-11})	<1	NE	NE	NE	NE	NE

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Notes:

bgs	Below ground surface
COPC	Chemical of potential concern
ELCR	Excess lifetime cancer risk
EPC	Exposure point concentration
HI	Hazard index
mg/kg	Milligram per kilogram
NC	Not calculated; no carcinogenic COPCs identified in this exposure area; therefore, total segregated HI not calculated
NE	Not evaluated
#	Detected concentration exceeds U.S. Environmental Protection Agency (EPA) Region IX preliminary remediation goal (PRG) for industrial soil
α	Detected concentration exceeds Hunters Point ambient level (HPAL)
a	The number presented in parentheses is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The number presented in parentheses is the associated exposure area for the residential scenario based on a 2,500-square foot exposure area. The total ELCRs for the residential scenario are presented in Table N.5-9, and the total HIs for the residential scenario are presented in Table N.5-10.
d	The total ELCR presented is for the RME case. The value presented in parentheses is for the average exposure case. The total ELCR evaluates the ingestion of, dermal contact with, and inhalation of volatile organic compounds (VOC) and particulate emissions from the soil exposure pathway.
e	The total HIs for the industrial scenario are presented in Table N.I-1 of Attachment N-I.
f	Only the COPC-specific ELCRs for COPCs contributing about 90 percent of the total ELCRs that exceed 1×10^{-6}, COPCs contributing a risk exceeding 1×10^{-6} under the RME case, or lead concentrations exceeding 1,000 mg/kg are listed.
g	The value presented is the EPC assumed for the COPCs contributing significantly to the total ELCR under the RME case.
h	If the COPC-specific total ELCR exceeding 1×10^{-6} can be attributed to one or several sampling locations, the sampling location, depth, and concentration are listed.
i	Chromium VI was not speciated; therefore, for all IR-sites except IR-36S, a surrogate chromium VI value was calculated assuming 0.78 percent of the total chromium value (see Attachment N-C). For IR-36S, a surrogate chromium VI value was calculated assuming 3.3 percent of the total chromium value.

TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-32	099069	PA32B001	93080065	02/25/93	4.25	72.4	0.38	ND	0.05
		PA32B001	93080066	02/25/93	6.75	23.1	0.38	ND	0.05
	112068	PA32B002	93080061	02/24/93	2.25	70.7	0.39	ND	0.05
		PA32B002	93080062	02/24/93	4.25	61.9	0.40	ND	0.05
		PA32B002	93080063	02/24/93	9.25	28.5	0.43	ND	0.05
	113067	PA32B003	93080058	02/24/93	2.25	80.1	0.39	ND	0.05
		PA32B003	93080060	02/24/93	6.75	77.4	0.40	ND	0.05
	113070	PA32B005	93080055	02/24/93	2.25	58.9	0.37	ND	0.05
		PA32B005	93080056	02/24/93	4.25	123	0.41	ND	0.05
		PA32B005	93080057	02/24/93	6.75	21.0	0.43	ND	0.05
	114068	PA32MW04A	93080051	02/24/93	2.25	94.1	0.40	ND	0.05
		PA32MW04A	93080052	02/24/93	4.25	152	0.40	ND	0.05
		PA32MW04A	93080053	02/24/93	6.75	27.3	0.40	ND	0.05
		PA32MW04A	93080054	02/24/93	9.25	28.6	0.41	ND	0.05
IR-33N	072061	IR09B028	9013Q164	03/30/90	0.75	205	1.9	ND	0.06
		IR09B028	9013Q165	03/30/90	2.75	742	1.9	ND	0.06
		IR09B028	9013Q166	03/30/90	5.25	496	1.9	ND	0.06
	073062	IR09B030	9013Q167	03/30/90	1.25	85.9	0.36	ND	0.05
		IR09B030	9013Q168	03/30/90	2.75	497	0.37	ND	0.06
		IR09B030	9013Q169	03/30/90	5.25	539	0.38	ND	0.06
	074059	PA33SS42	9310J386	03/10/93	1.85	382	0.41	ND	0.05
	076056	PA33SS59	9310J388	03/11/93	1.25	191	0.42	ND	0.05
	079055	PA50TA05	9324A057	06/18/93	7.75	75.5	0.38	ND	0.94
IR-33S	075064	IR09B032	9014H076	04/02/90	1.75	276	0.37	ND	0.05
		IR09B032	9014H077	04/02/90	2.75	372	0.38	ND	0.06
		IR09B032	9014H078	04/02/90	5.25	623	0.39	ND	0.06
		IR09B032	9014H079	04/02/90	9.75	371	0.39	ND	0.06
	075069	IR09B024	8939E044	09/28/89	1.25	555	0.62	ND	0.06
		IR09B024	8939E045	09/28/89	3.25	922	0.65	0.08	0.06
		IR09B024	8939E046	09/28/89	5.25	376	0.70	ND	0.06
		IR09B024	8939E047	09/28/89	10.75	412	0.74	ND	0.05
	075070	IR09MW35A	9015H091	04/10/90	1.25	546	0.38	ND	0.06
		IR09MW35A	9015H092	04/10/90	2.25	727	0.39	ND	0.06
		IR09MW35A	9015H093	04/10/90	5.25	569	0.39	ND	0.06
		IR09MW35A	9015H094	04/10/90	10.75	303	0.38	ND	0.06
		IR09MW35A	9015H095	04/10/90	14.75	338	0.37	ND	0.06
	081076	PA50B015	9330H504	07/26/93	8.25	346	0.70	ND	0.05
		PA50TA11	9327P231	07/07/93	6.25	228	0.39	ND	0.12
	082075	PA33MW37A	9309A641	03/02/93	3.75	104	0.70	ND	0.05

TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-33S	082075	PA33MW37A	9309A642	03/02/93	6.75	379	0.77	ND	0.05
		PA33MW37A	9309A643	03/02/93	11.75	357	0.79	ND	0.05
		PA33MW37A	9309A644	03/02/93	16.75	347	0.82	ND	0.05
	084071	PA33MW36A	9309A647	03/02/93	3.25	199	0.81	ND	0.05
		PA33MW36A	9309A648	03/02/93	6.25	530	0.80	ND	0.05
		PA33MW36A	9309A649	03/02/93	11.75	132	0.79	ND	0.05
		PA33MW36A	9309A650	03/02/93	16.75	333	0.81	ND	0.05
IR-34	079062	PA34B005	93080085	02/26/93	2.25	17.1	0.62	ND	0.05
		PA34B005	93080086	02/26/93	6.75	38.0	0.63	ND	0.05
IR-35	091062	IR35B017	9606G070	02/05/96	7.00	67.1	0.09	0.08	0.05
		IR35B017	9606G071	02/05/96	11.25	91.8	0.10	ND	0.05
		IR35B017	9606G072	02/05/96	16.25	113	0.10	ND	0.05
		IR35B017	9606G073	02/05/96	21.25	71.0	0.09	0.07	0.05
		IR35B017	9606G074	02/05/96	26.25	117	0.09	ND	0.05
		IR35B017	9606G075	02/05/96	32.25	56.3	0.10	ND	0.05
		IR35B017	9606G076	02/05/96	42.00	159	0.10	ND	0.05
		IR35B019	9606J842	02/06/96	2.50	132	0.09	0.12	0.05
		IR35B019	9606J843	02/06/96	6.50	131	0.09	0.06	0.05
	092058	IR22MW08A	9317A798	04/27/93	1.75	149	0.71	ND	0.05
		IR22MW08A	9317A799	04/27/93	3.75	197	0.73	ND	0.05
		IR22MW08A	9317A800	04/27/93	6.25	117	0.73	ND	0.05
		IR22MW08A	9317A801	04/27/93	11.75	125	0.73	ND	0.05
		IR22MW08A	9317A802	04/27/93	16.75	141	0.78	ND	0.05
		IR22MW08A	9317A803	04/27/93	21.75	153	0.80	ND	0.05
	092059	IR22B010	9320A012	05/18/93	1.75	136	0.74	ND	1.0
		IR22B010	9320A013	05/18/93	3.75	139	0.74	0.34	0.10
		IR22B010	9320A014	05/18/93	6.75	109	0.74	0.28	0.10
		IR22B010	9320A015	05/18/93	11.75	113	11.2	0.73	0.10
		IR22B010	9320A016	05/18/93	16.75	139	11.2	0.37	0.10
		IR22B010	9320A018	05/19/93	21.75	113	0.37	0.38	0.25
		IR22B010	9320A019	05/19/93	31.75	58.3	0.38	ND	6.5
	092061	IR35B018	9604J766	01/25/96	2.50	109	0.09	ND	0.10
		IR35B018	9604J767	01/25/96	5.00	111	0.09	ND	0.05
	093063	IR22MW15A	9317A808	04/29/93	1.75	111	0.71	ND	0.05
		IR22MW15A	9317A809	04/29/93	3.75	133	0.72	ND	0.05
		IR22MW15A	9317A810	04/29/93	6.25	152	0.74	ND	0.05
		IR22MW15A	9317A811	04/29/93	11.75	142	0.81	ND	0.05
		IR22MW15A	9317A812	04/29/93	16.75	159	0.79	ND	0.05
		IR22MW15A	9317A813	04/29/93	26.75	162	0.79	ND	0.05
		IR22MW15A	9317A814	04/29/93	31.75	136	0.77	ND	0.05
	093065	IR22B017	9320A020	05/19/93	1.75	98.3	0.31	ND	0.32
		IR22B017	9320A021	05/19/93	3.75	72.4	0.34	0.57	0.23
		IR22B017	9320A022	05/19/93	6.75	107	0.36	ND	3.8
		IR22B017	9320A023	05/19/93	11.75	95.2	0.35	ND	0.65
		IR22B017	9320A026	05/19/93	21.75	115	0.33	0.26	0.06

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a] HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[f] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-33N	074054				IR33B079	9434K051	6.25	988.500	
	074057	No	No	ND	IR33B083	9413L176	1.25	286.000	
					IR33B083	9413L177	6.25	112.000	
	074059	Yes	No	ND					
	075056	No	No	ND	IR50B022	9422R216	1.75	133.000	
					IR50B022	9422R217	5.75	40.900	
	075057	No	No	ND	IR33B064	9420C232	3.25	29.700	
					IR33B064	9420C233	6.25	110.000	
	075060	No	No	11.687	IR33B087	9413L193	1.25	1498.380 *	11.687 *
					IR33B087	9413L194	6.25	817.970	
	076055	No	No	ND	IR33B060B	9423R229	1.75	343.000	
					IR33B060B	9423R230	6.25	483.000	
	076056	Yes	No	ND	IR33B085	9413L183	1.25	522.890	
					IR33B085	9413L184	6.25	63.350	
	076057	No	No	ND	IR33B061	9415A789	2.75	112.350	
					IR33B061	9415A790	7.75	77.280	
					IR33B062	9414H569	2.25	18.030	
					IR33B062	9414H570	7.75	116.610	
					IR33B063	9414H565	1.75	182.510	
					IR33B063	9414H566	6.25	141.640	
					IR33B090	9431R494	1.75	273.610	
					IR33B090	9431R495	6.25	126.770	
					PA33B013	9313N182	1.75	112.900	
					PA33B013	9313N183	6.25	125.770	
					PA33B018	9309A651	2.25	190.000	
					PA33B018	9309A652	6.75	127.000	
	076058	No	No	ND	IR33B089	9413L163	1.25	58.900	
					IR33B089	9413L164	6.25	73.200	
	077056	No	No	ND	IR33B068	9419L432	5.75	41.200	
					IR33B069	9419L438	6.25	57.800	
					IR33B070	9415C127	6.25	186.000	
	077057	No	No	ND	IR33B091	9413L170	1.25	33.200	
					IR33B091	9413L171	6.25	111.000	
	079055	Yes	No	ND					
IR-33S	075063	No	No	ND	IR33B118	9543W088	0.50	395.000	
					IR33B118	9543W089	5.75	451.000	

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a] HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[g] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-33S	075064	Yes	No	ND					
	075069	Yes	No	0.082					
	075070	Yes	No	ND					
	076063	No	No	ND	IR33B067 PA33B040 PA33B040	9420R130 9308D076 9308D077	6.25 2.25 6.75	122.000 369.520 331.940	
	076064	No	No	ND	PA33B039 PA33B039	9308D068 9308D069	2.25 6.75	120.480 147.350	
	077064	No	No	ND	PA33B038 PA33B038	9308D071 9308D072	2.25 6.75	144.670 155.200	
	077072	No	No	0.741	IR33B092 IR33B092 IR33B094 IR33B094 IR33B094 PA33B058	9606J855 9606J856 9545J590 9545J591 9545J592 9311N180	1.25 4.50 1.25 6.75 9.75 3.75	95.000 * 57.400 * 350.000 89.000 214.000 218.000	0.741 * 0.448 *
	078072	No	No	ND	PA33SS52	9310J393	4.50	306.660	
	079064	No	No	ND	IR34B033 IR34B033	9438A072 9438A073	2.25 6.25	5.850 115.490	
	079072	No	No	0.890	PA33B053	9311N177	9.75	114.060 *	0.890 *
	079074	No	No	ND	PA33B055	9311N176	9.25	178.660	
	081065	No	No	ND	PA34SS14	9312A696	1.25	80.080	
	081069	No	No	10.542	PA33SS57	9310J394	5.25	1351.600 *	10.542 *
	081070	No	No	ND	IR33B095 IR33B095	9607J869 9607J870	1.60 5.50	91.100 408.000	
	081073	No	No	1.131	IR33B096 IR33B096	9607J866 9607J867	1.75 6.50	145.000 * 143.000 *	1.131 * 1.115 *
	081076	Yes	No	ND					
	082069	No	No	ND	PA33B056	9313N181	7.25	95.160	
	082075	Yes	No	ND					
	083071	No	No	ND	IR33B100	9438A066	6.25	277.630	

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a] HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[g] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-33S	084069	No	No	ND	PA33B035	9308D074	2.25	162.620	
					PA33B035	9308D075	6.75	139.000	
	084071	Yes	No	ND					
	085069	No	No	ND	PA45TA08	9322P222	5.75	68.820	
	087067	No	No	ND	PA33B051	9342G750	7.25	75.140	
	087069	No	No	ND	IR33B117	9532G038	0.75	64.200	
					IR33B117	9532G040	4.25	59.000	
					IR33B117	9532G041	9.25	106.000	
IR-34	078062	No	No	ND	IR34B017	9413L200	1.25	78.760	
					IR34B017	9413L201	6.25	66.480	
					IR34B018	9432A029	1.25	26.480	
					IR34B018	9432A030	7.25	97.620	
	079061	No	No	ND	IR34B019	9414L218	1.25	195.000	
					IR34B019	9414L219	6.25	181.000	
					IR34B024	9434R584	6.25	30.560	
					PA34B006	9308D088	2.25	71.200	
					PA34B006	9308D089	6.75	114.000	
	079062	Yes	No	ND					
	079064	No	No	ND	IR34B033	9438A072	2.25	5.850	
					IR34B033	9438A073	6.25	115.490	
	080058	No	No	ND	IR34B029	9434R622	1.25	81.930	
					IR34B029	9434R623	6.25	143.070	
	080059	No	No	ND	IR34B028	9427R372	1.75	77.090	
					IR34B028	9427R373	6.25	135.010	
	080060	No	No	ND	IR34B020	9427R384	1.75	83.140	
					IR34B020	9427R385	6.25	81.610	
					IR34B020	9427R386	9.75	106.410	
					IR34B026	9434R616	1.75	67.780	
					IR34B026	9434R617	6.25	106.740	
	081058	No	No	ND	IR34B022	9427R378	1.75	54.460	
					IR34B022	9427R379	7.75	162.160	
					PA34B009	9308D079	2.25	87.400	
					PA34B009	9308D080	6.75	102.000	
	081059	No	No	ND	IR34B021	9414L228	1.25	123.000	
					IR34B021	9414L229	6.25	121.000	
					IR50B018	9422R213	3.75	83.900	

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TABLE N.D-4
GROUNDWATER SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/L)	Total Chromium Detection Limit (mg/L)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-09	076065	IR33MW116A	96142025	04/04/96	0.00	ND	0.0007	ND	0.01
	077066	IR09P041A	9141X202	10/07/91	0.00	0.008	0.002	ND	0.01
		IR09P041A	9151X343	12/17/91	0.00	ND	0.003	ND	0.01
		IR09P041A	9345X076	11/10/93	0.00	ND	0.003	ND	0.02
		IR09P041A	9408X239	02/24/94	0.00	ND	0.002	ND	0.03
		IR09P041A	9419X270	05/09/94	0.00	ND	0.0009	ND	0.03
		IR09P041A	9419X271	05/09/94	0.00	ND	0.001	ND	0.02
		IR09P041A	9435E167	09/02/94	0.00	ND	0.0007	ND	0.04
IR-17	115087	IR17MW11A	9134X199	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW11A	9209X570	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X760	09/16/92	0.00	ND	0.003	ND	0.01
		IR17MW11A	9238X761	09/16/92	0.00	ND	0.003	ND	0.01
	119091	IR17MW12A	9134X198	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW12A	9209X568	02/27/92	0.00	ND	0.003	ND	0.01
		IR17MW12A	9238X770	09/17/92	0.00	ND	0.003	ND	0.01
	121088	IR17MW13A	9134X196	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9134X197	08/29/91	0.00	ND	0.002	ND	0.01
		IR17MW13A	9209X571	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9209X572	02/28/92	0.00	ND	0.003	ND	0.01
		IR17MW13A	9238X771	09/17/92	0.00	ND	0.003	ND	0.01
IR-22	092058	IR22MW08A	9318X989	05/06/93	0.00	ND	0.008	ND	0.01
		IR22MW08A	9336X027	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW08A	9402X169	01/13/94	0.00	ND	0.002	ND	0.02
	095060	IR22MW20A	9608J879	02/20/96	0.00	ND	0.0004	ND	0.01
	098056	IR22MW07A	9320P200	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9320P201	05/18/93	0.00	ND	0.003	ND	0.01
		IR22MW07A	9336X026	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW07A	9402X173	01/14/94	0.00	ND	0.002	ND	0.03
	098063	IR22MW16A	9318X993	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9318X994	05/06/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9336X029	09/09/93	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X171	01/14/94	0.00	ND	0.002	ND	0.01
		IR22MW16A	9402X172	01/14/94	0.00	ND	0.002	ND	0.03
IR-32	099069	PA50MW07A	9317X967	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9317X968	04/26/93	0.00	ND	0.002	ND	0.01
		PA50MW07A	9612W177	03/20/96	0.00	0.002	0.0004	ND	0.01
	114068	PA32MW04A	9308A630	02/26/93	0.00	ND	0.003	ND	0.01
		PA32MW04A	9308A631	02/26/93	0.00	ND	0.003	ND	0.01
IR-33N	079055	PA50MW11A	9317B102	04/27/93	0.00	ND	0.002	ND	0.01
IR-33S	075070	IR09MW35A	9017J001	04/25/90	0.00	0.09	0.002	0.06	0.01
		IR09MW35A	9017J002	04/25/90	0.00	0.10	0.002	0.06	0.01

TABLE N.D-4
GROUNDWATER SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/L)	Total Chromium Detection Limit (mg/L)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-33S	075070	IR09MW35A	9101J114	01/02/91	0.00	0.06	0.003	0.06	0.01
		IR09MW35A	9101J115	01/02/91	0.00	0.06	0.003	0.05	0.01
		IR09MW35A	9128X081	07/08/91	0.00	0.09	0.002	0.10	0.01
		IR09MW35A	9128X082	07/08/91	0.00	0.09	0.002	0.10	0.01
		IR09MW35A	9151X332	12/16/91	0.00	0.09	0.003	0.13	0.01
		IR09MW35A	9151X333	12/16/91	0.00	0.09	0.003	0.12	0.01
		IR09MW35A	9345X072	11/09/93	0.00	0.07	0.003	0.08	0.01
		IR09MW35A	9408X220	02/22/94	0.00	0.07	0.002	0.07	0.01
		IR09MW35A	9419M551	05/12/94	0.00	0.08	0.0009	0.09	0.01
		IR09MW35A	9419M552	05/12/94	0.00	0.08	0.0009	0.11	0.01
		IR09MW35A	9435E165	09/02/94	0.00	0.07	0.0007	0.08	0.01
		IR09MW35A	9435E166	09/02/94	0.00	0.07	0.0007	0.08	0.01
	076072	IR09MW44A	9141X206	10/08/91	0.00	ND	0.002	ND	0.01
		IR09MW44A	9151X346	12/18/91	0.00	ND	0.003	ND	0.01
		IR09MW44A	9151X347	12/18/91	0.00	ND	0.003	ND	0.01
		IR09MW44A	9345X077	11/10/93	0.00	ND	0.003	ND	0.01
		IR09MW44A	9408X218	02/22/94	0.00	ND	0.002	ND	0.01
		IR09MW44A	9408X219	02/22/94	0.00	ND	0.002	ND	0.01
		IR09MW44A	9419X285	05/11/94	0.00	ND	0.0009	ND	0.01
		IR09MW44A	9436X456	09/07/94	0.00	ND	0.0007	ND	0.01
		IR09MW44A	9436X457	09/07/94	0.00	ND	0.0007	ND	0.01
	077070	IR09P042A	9141X208	10/08/91	0.00	ND	0.002	ND	0.01
		IR09P042A	9151X348	12/18/91	0.00	ND	0.003	ND	0.01
		IR09P042A	9345X087	11/11/93	0.00	ND	0.003	ND	0.01
		IR09P042A	9345X088	11/11/93	0.00	ND	0.003	ND	0.01
		IR09P042A	9408X237	02/24/94	0.00	ND	0.002	ND	0.05
		IR09P042A	9419X272	05/09/94	0.00	ND	0.001	ND	0.02
		IR09P042A	9436X461	09/08/94	0.00	ND	0.0007	ND	0.01
		IR09P042A	9436X462	09/08/94	0.00	ND	0.0007	ND	0.02
		IR09P043A	9141X207	10/08/91	0.00	ND	0.002	ND	0.01
		IR09P043A	9151X349	12/18/91	0.00	ND	0.003	ND	0.01
		IR09P043A	9345X078	11/10/93	0.00	ND	0.003	ND	0.01
		IR09P043A	9345X079	11/10/93	0.00	ND	0.003	ND	0.01
		IR09P043A	9408X235	02/24/94	0.00	ND	0.002	ND	0.02
		IR09P043A	9408X236	02/24/94	0.00	ND	0.002	ND	0.03
		IR09P043A	9419M548	05/12/94	0.00	ND	0.0009	ND	0.01
		IR09P043A	9436X463	09/08/94	0.00	ND	0.0007	ND	0.02
	079068	IR09P040A	9141X210	10/08/91	0.00	ND	0.002	ND	0.01
		IR09P040A	9141X211	10/08/91	0.00	ND	0.002	ND	0.01
		IR09P040A	9151X341	12/17/91	0.00	ND	0.003	ND	0.01
		IR09P040A	9151X342	12/17/91	0.00	ND	0.003	ND	0.01
		IR09P040A	9345X094	11/12/93	0.00	ND	0.003	ND	0.02
		IR09P040A	9345X095	11/12/93	0.00	ND	0.003	ND	0.02
		IR09P040A	9408X238	02/24/94	0.00	ND	0.002	ND	0.03
		IR09P040A	9419X280	05/11/94	0.00	ND	0.0009	ND	0.02
		IR09P040A	9436X464	09/08/94	0.00	ND	0.0007	ND	0.01
	082075	PA33MW37A	9312X951	03/25/93	0.00	ND	0.002	ND	0.01
		PA33MW37A	9312X952	03/25/93	0.00	ND	0.002	ND	0.01
	084071	PA33MW36A	9312X953	03/25/93	0.00	ND	0.002	ND	0.01

TABLE N.D-5
GROUNDWATER SAMPLES ANALYZED FOR CHROMIUM VI ONLY
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Chromium VI Concentration (mg/L)	Chromium VI Detection Limit (mg/L)
IR-09	067065	IR09MW51F	96152043	04/09/96	0.00	0.05	0.01
	069072	IR09MW52A	96152042	04/09/96	0.00	ND	0.01
	075070	IR09MW35A	9530X901	07/28/95	0.00	0.12	0.01
IR-16	110090	PA16MW16A PA16MW16A	9107X054 9107X055	02/12/91 02/12/91	0.00 0.00	ND ND	0.01 0.01
	112089	PA16MW18A PA16MW18A	9107X059 9107X060	02/14/91 02/14/91	0.00 0.00	ND ND	0.01 0.01
	112091	PA16MW17A	9107X057	02/12/91	0.00	ND	0.01
IR-32	099069	PA50MW07A	9618J072	05/01/96	0.00	ND	0.01
IR-33S	075070	IR09MW35A	9530X901	07/28/95	0.00	0.12	0.01
IR-37	067065	IR09MW51F	96152043	04/09/96	0.00	0.05	0.01
IR-53	110090	PA16MW16A PA16MW16A	9107X054 9107X055	02/12/91 02/12/91	0.00 0.00	ND ND	0.01 0.01
	112089	PA16MW18A PA16MW18A	9107X059 9107X060	02/14/91 02/14/91	0.00 0.00	ND ND	0.01 0.01
	112091	PA16MW17A	9107X057	02/12/91	0.00	ND	0.01

Notes:

bgs Below ground surface
mg/L Microgram per liter
ND Not detected

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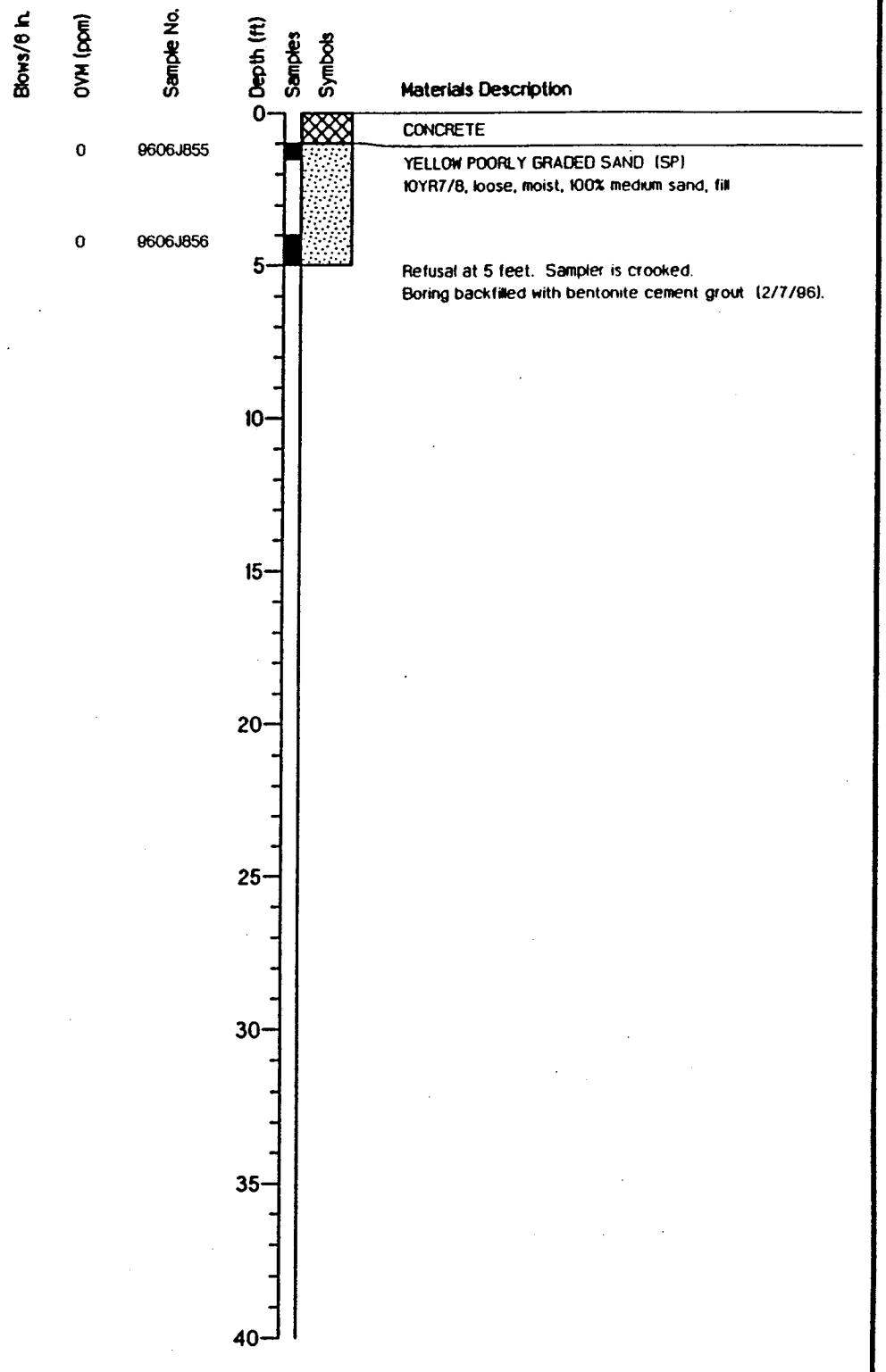
PRC Environmental Management, Inc.

LOG OF BORING IR33B092

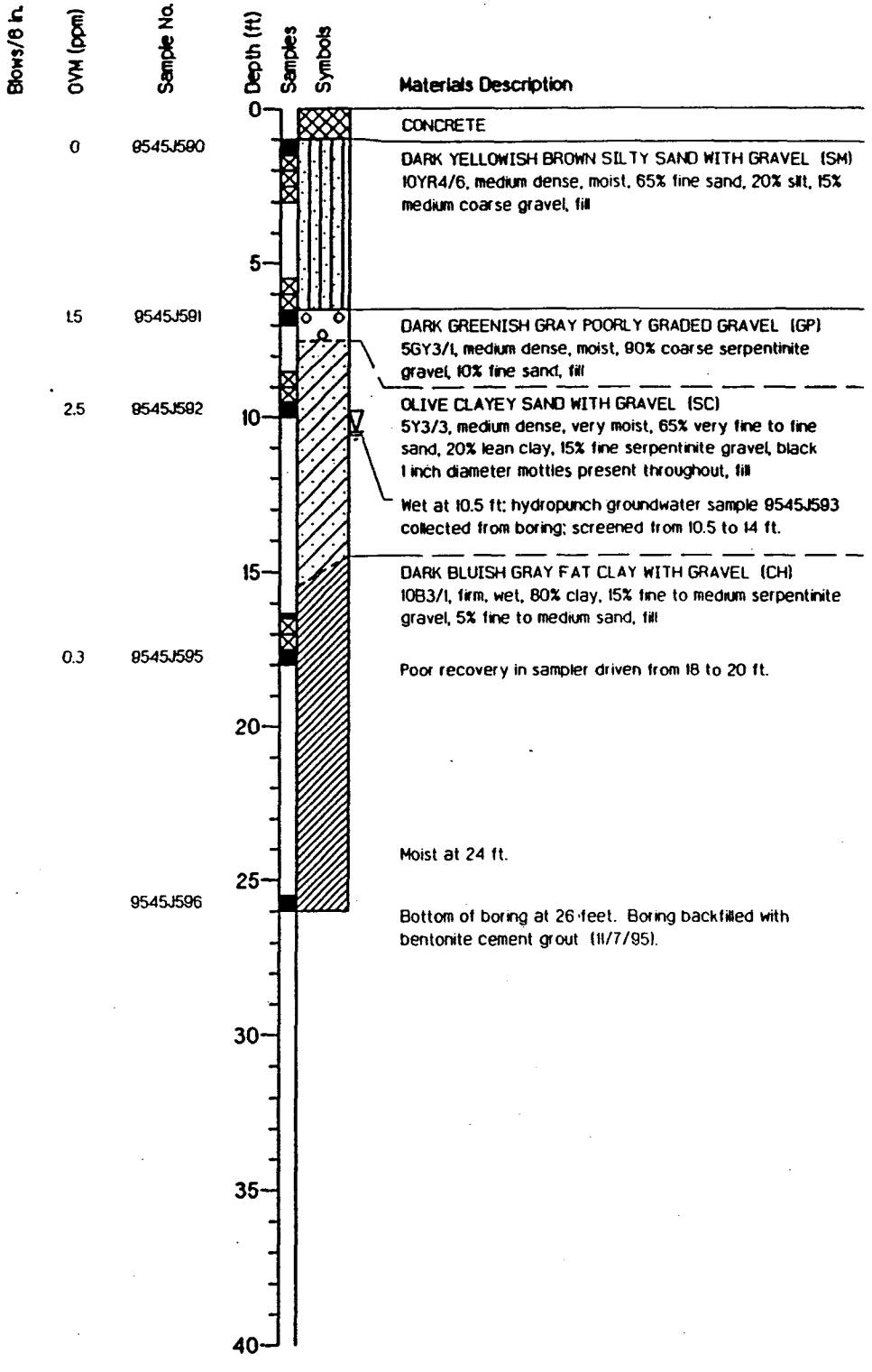


Project Number	CTO 5	Date Drilled	2/7/96
Project Name	Parcel D RI Report	GS Elevation	NA
Project Task	Hunters Point Annex	First Encountered Wet Soil	None Encountered
Project Location	San Francisco, California	Total Depth Of Borehole	5 ft.
Equipment	Limited Acess Rig (RAMSET) 1.5 in. diam.		

Figure

PRC Environmental Management, Inc.

LOG OF BORING IR33B094

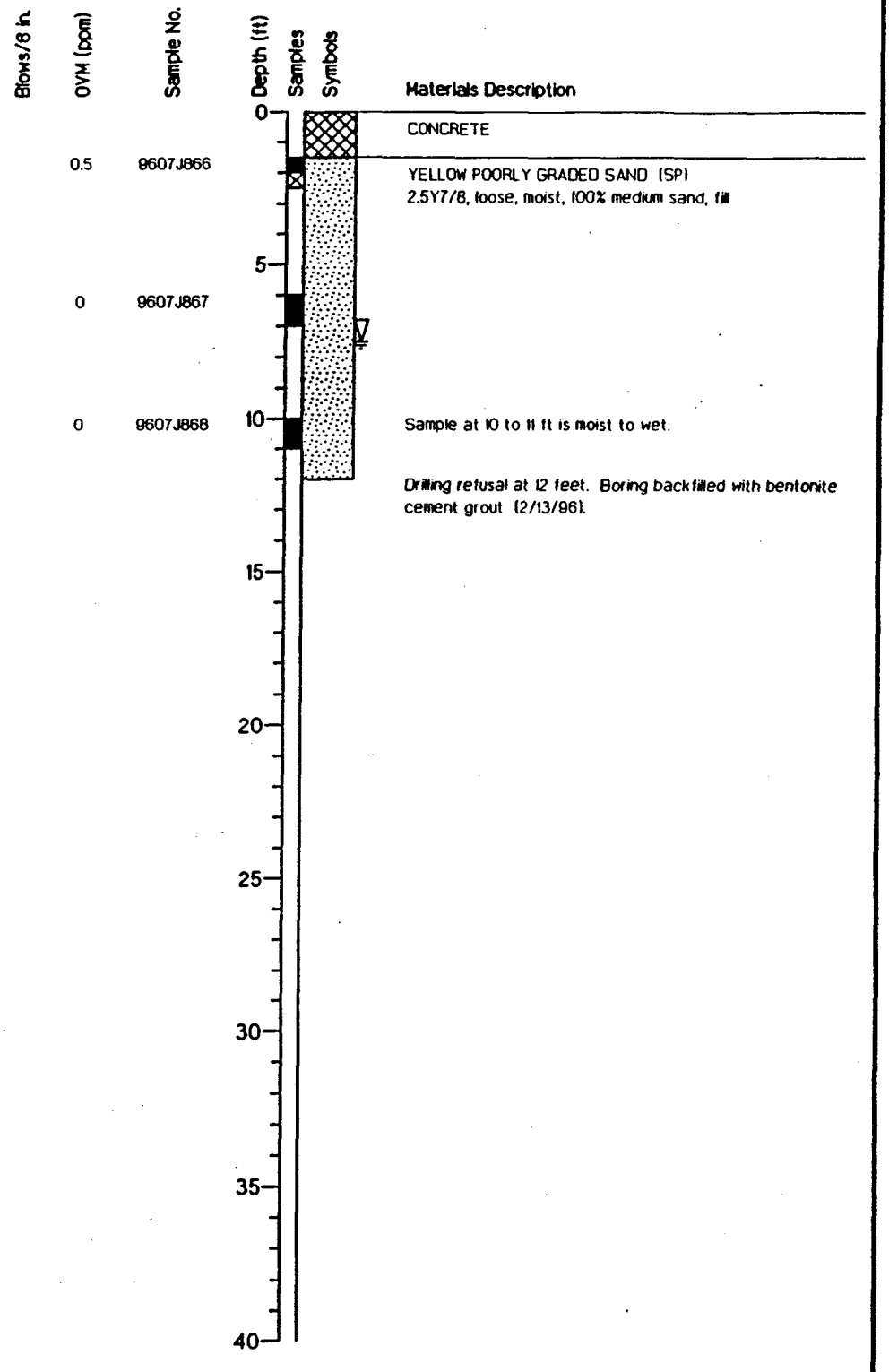


Project Number	CTO 5	**Date Drilled**	11/07/95
Project Name	Parcel D RI Report	**GS Elevation**	9.6 ft.
Project Task	Hunters Point Annex	**First Encountered Wet Soil**	10.5 ft.
Project Location	San Francisco, California	**Total Depth Of Borehole**	26 ft.
Equipment	Ram Set (LAR), 4 in. diam.		

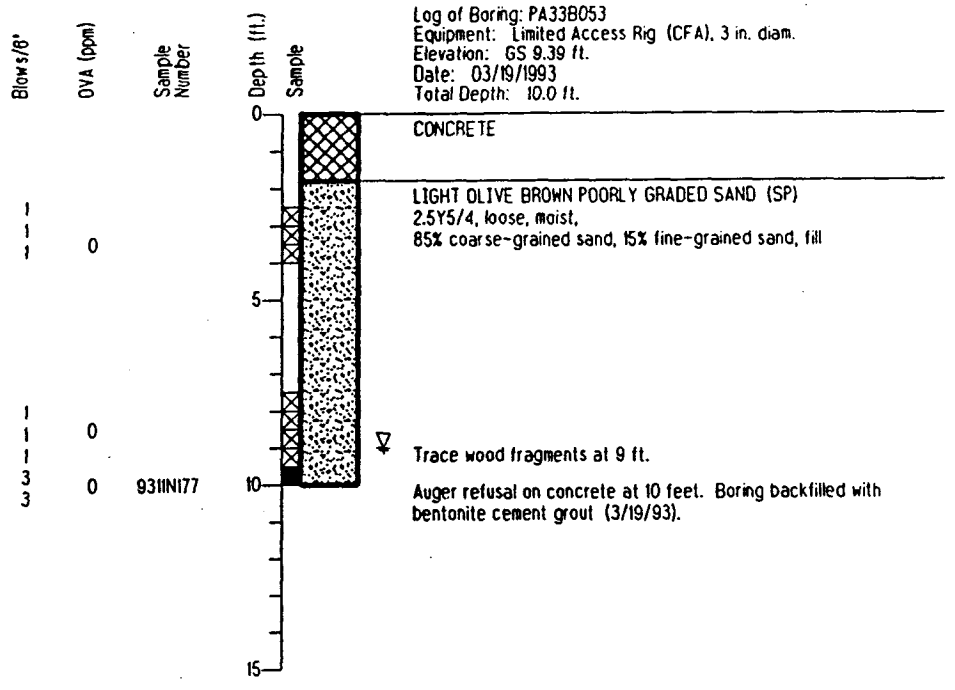
Figure

PRC Environmental Management, Inc.

LOG OF BORING IR33B096



Project Number CTO 5	**Date Drilled** 2/13/96	Figure
Project Name Parcel D RI Report	**GS Elevation** NA	
Project Task Hunters Point Annex	**First Encountered Wet Soil** 7.5 ft.	
Project Location San Francisco, California	**Total Depth Of Borehole** 12 ft.	
Equipment Rhino Hollow Stem Auger (HSA) 1 in. diam.		



Log of Boring: PA33B053
Equipment: Limited Access Rig (CFA), 3 in. diam.
Elevation: GS 9.39 ft.
Date: 03/19/1993
Total Depth: 10.0 ft.

CONCRETE

LIGHT OLIVE BROWN POORLY GRADED SAND (SP)
2.5Y5/4, loose, moist,
85% coarse-grained sand, 15% fine-grained sand, fill

Trace wood fragments at 9 ft.

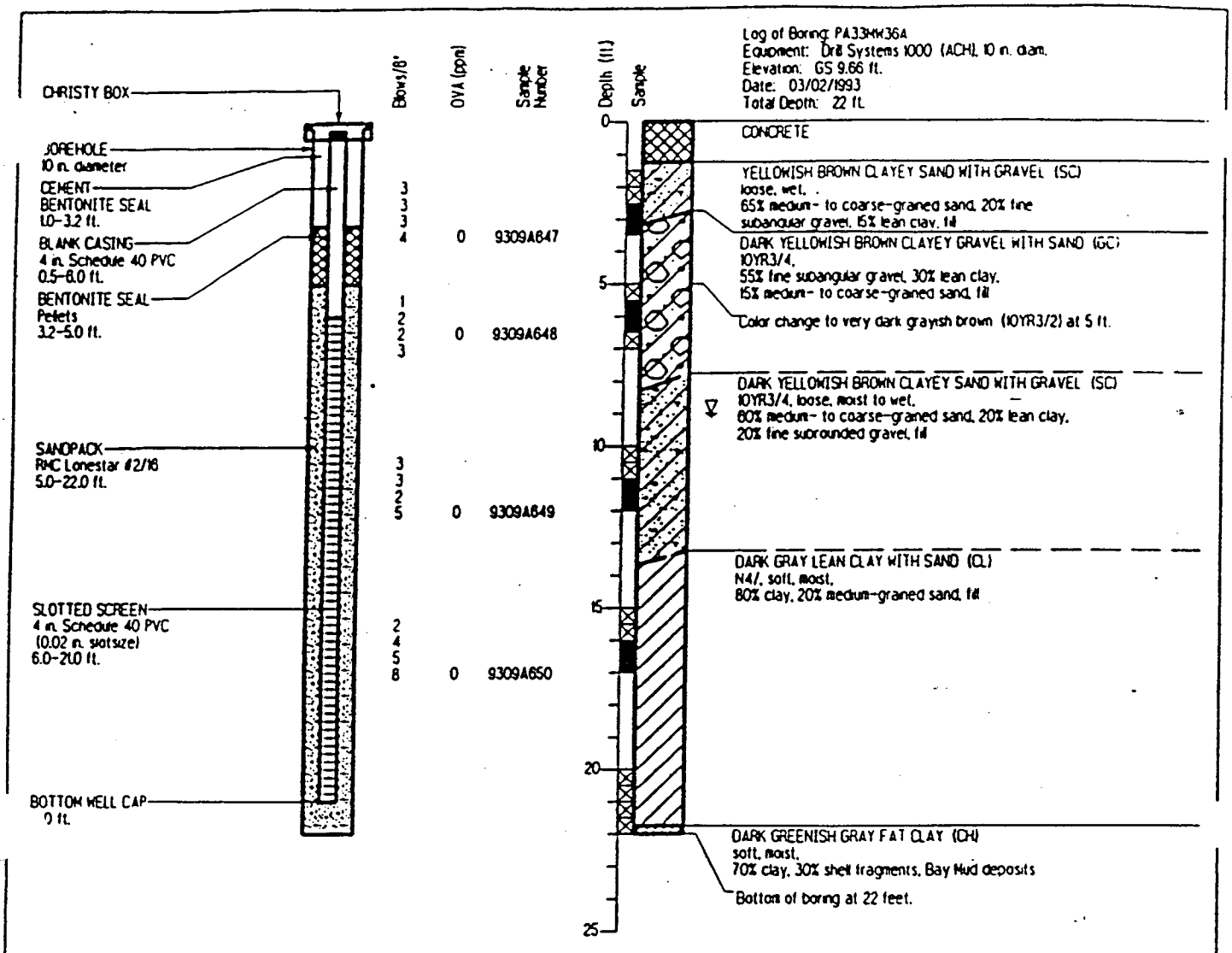
Auger refusal on concrete at 10 feet. Boring backfilled with bentonite cement grout (3/19/93).

PLATE

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring PA33B053
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
JSL	11400 090405		11/93	

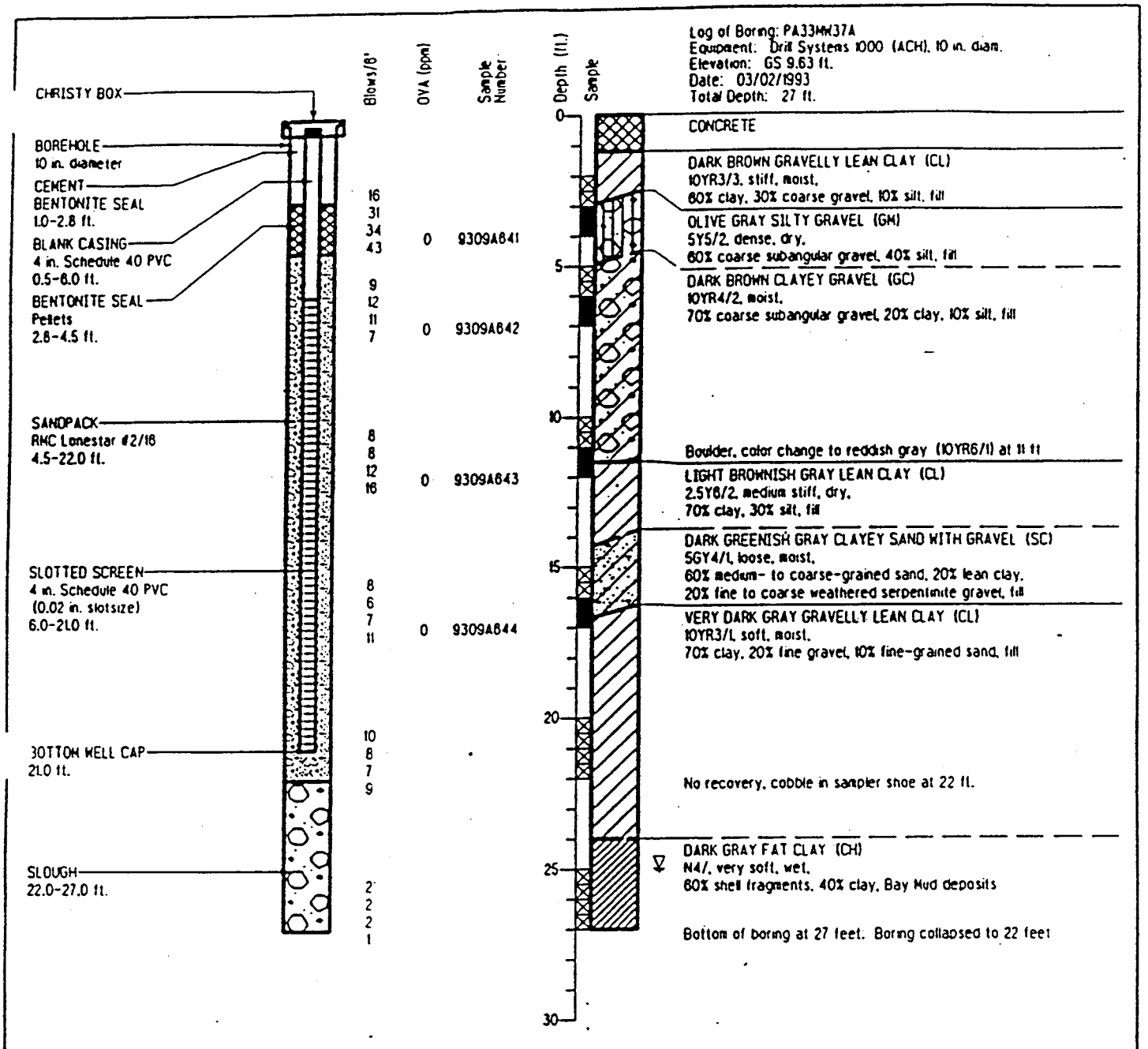


Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion PA33MW36A
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 090405		11/93	

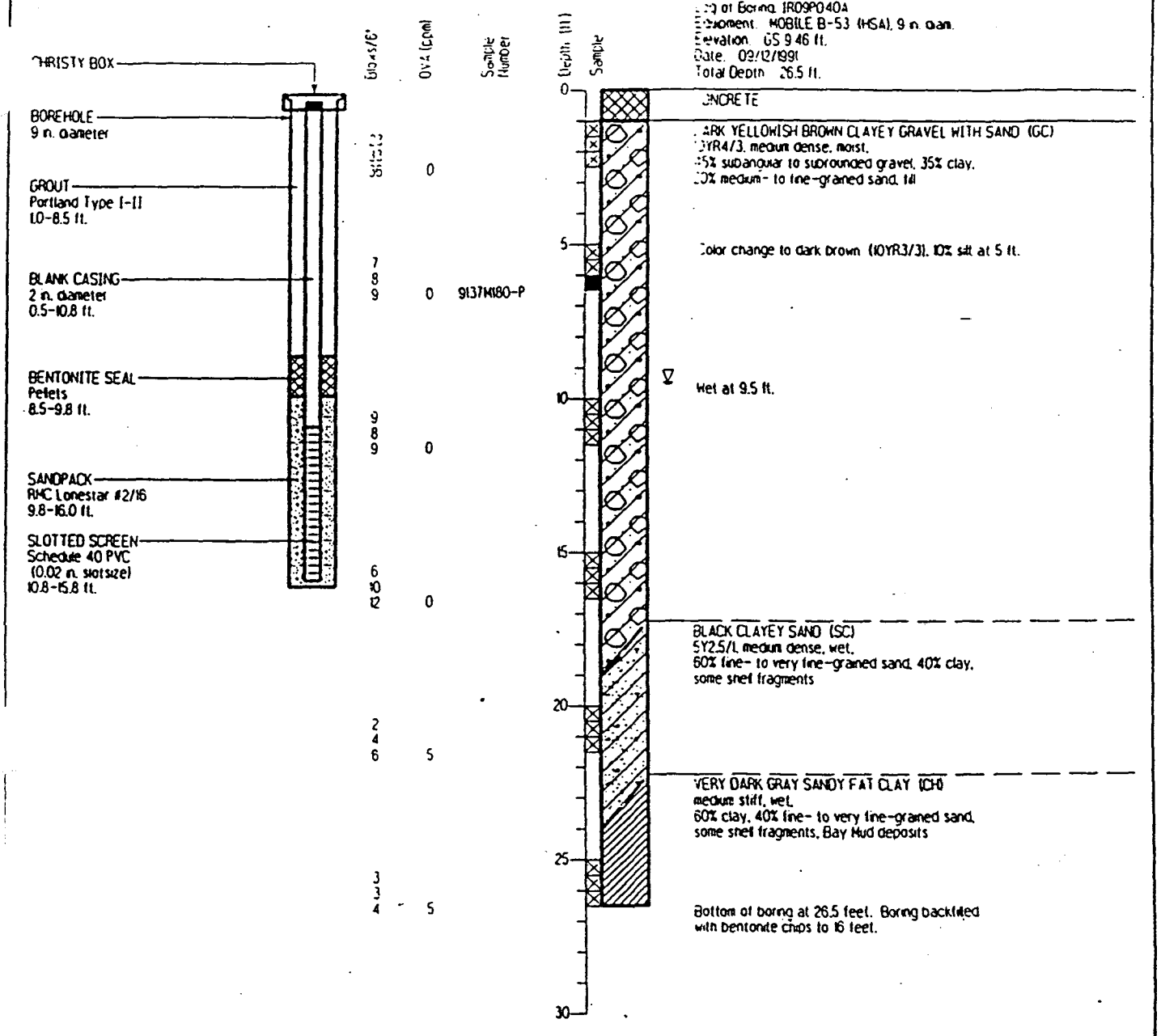


PLATE

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring and Well Completion PA33MW37A
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 090405		11/93	

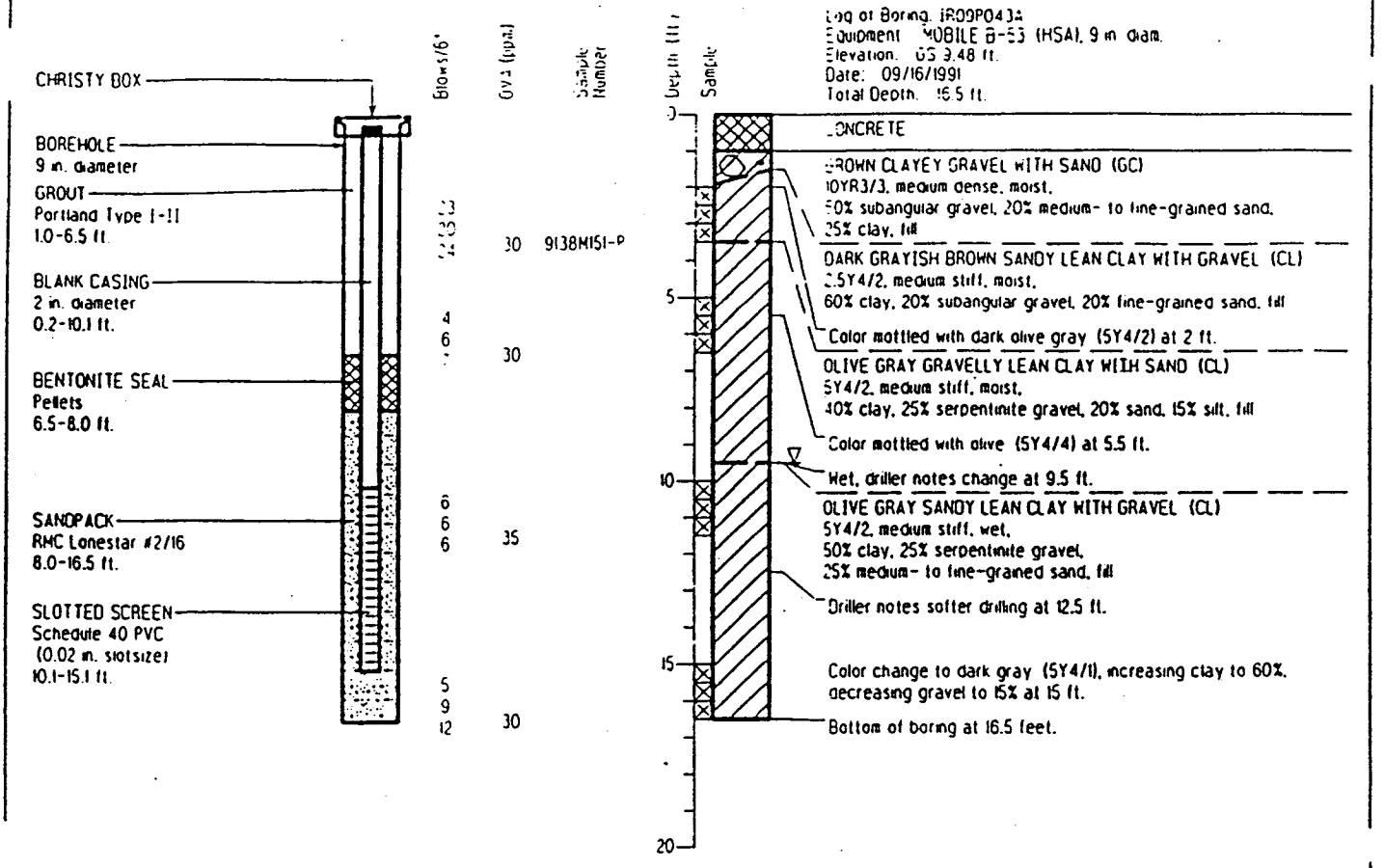


Herding Lawson Associates
Engineering and
Environmental Services

Log of Boring and Well Completion IR09P040A
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

PLATE
D99

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400.1005		03/94	



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion IR09P043A
Naval Station, Treasure Island
Hunters Point Annex
San Francisco, California

PLATE
D102

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LRH	11400 1005		03/94	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

SYM NO.	SYM	DESCRIPTION
1		A–AQUIFER MONITORING WELL
2		B–AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A–AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17	D	FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND–AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A–AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

REV 1 | SH 1 | DWG NO. 332092

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.09–2 SHT 1 of 3

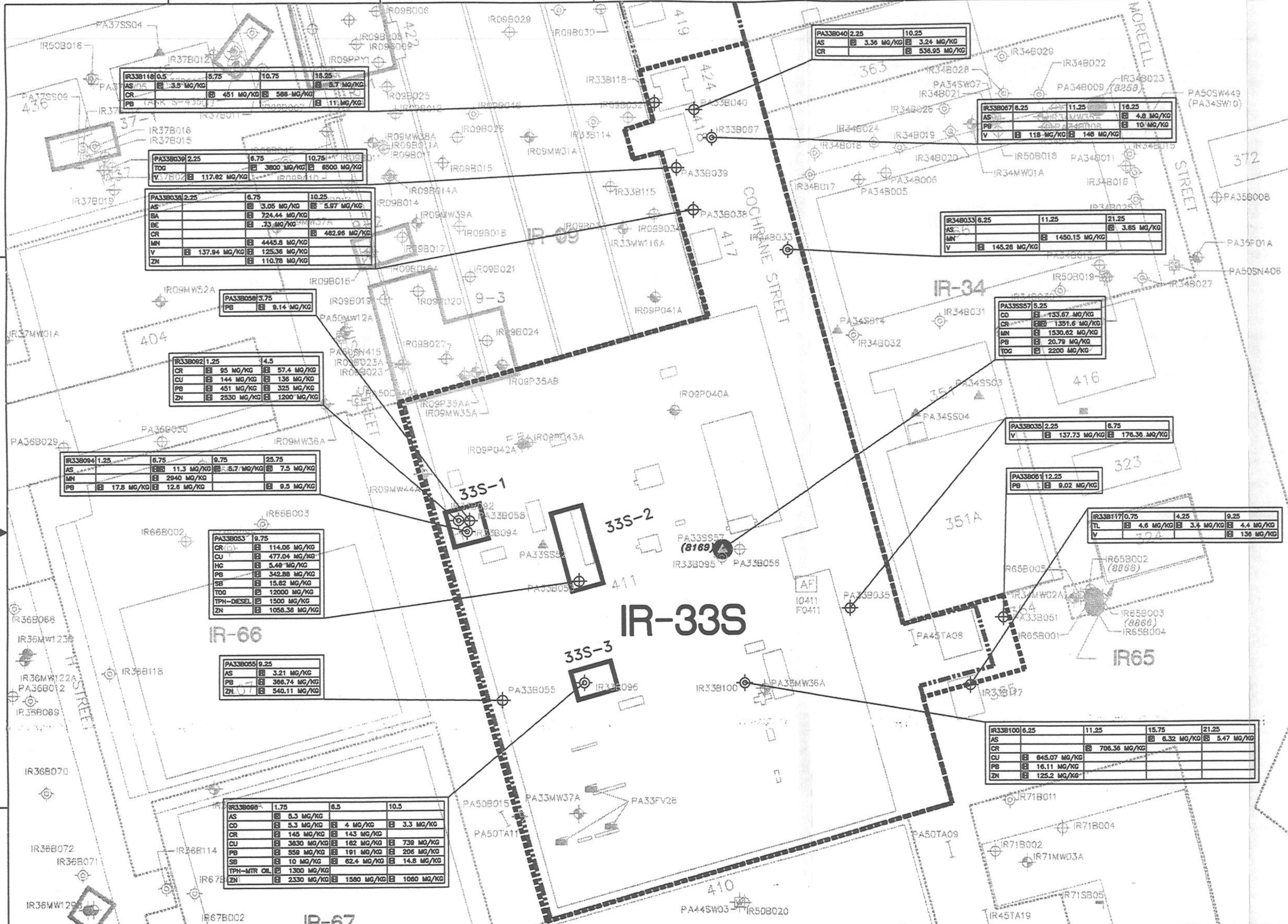
PARCEL D

IR–33S SOIL RESULTS

EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3320921_.DWG



IR33B118	0.5	5.75	10.75	15.25
AS	H 3.5 MG/KG			H 5.7 MG/KG
CR		H 451 MG/KG	H 588 MG/KG	
PB				H 11 MG/KG

PA33B039	2.25	6.75	10.75
TOG		P 3800 MG/KG	P 6500 MG/KG
V	H 117.82 MG/KG		

PA33B038	2.25	6.75	10.25
AS		H 3.05 MG/KG	H 5.97 MG/KG
BA		H 724.44 MG/KG	
BE		H .73 MG/KG	
CR			H 482.96 MG/KG
MN		H 4445.8 MG/KG	
V	H 137.94 MG/KG	H 125.36 MG/KG	
ZN		H 110.78 MG/KG	

PA33B056	3.75
PB	H 9.14 MG/KG

IR33B092	1.25	4.5
CR	H 95 MG/KG	H 57.4 MG/KG
CU	H 144 MG/KG	H 136 MG/KG
PB	H 451 MG/KG	H 325 MG/KG
ZN	H 2530 MG/KG	H 1200 MG/KG

IR33B094	1.25	6.75	9.75	25.75
AS		RH 11.3 MG/KG	H 8.7 MG/KG	H 7.5 MG/KG
MN		H 2940 MG/KG		
PB	H 17.8 MG/KG	H 12.6 MG/KG		H 9.5 MG/KG

PA33B053	9.75
CR	H 114.06 MG/KG
CU	H 477.04 MG/KG
HG	H 5.49 MG/KG
PB	H 342.88 MG/KG
SB	H 15.62 MG/KG
TOG	P 12000 MG/KG
TPH-DIESEL	P 1500 MG/KG
ZN	H 1056.36 MG/KG

PA33B055	9.25
AS	H 3.21 MG/KG
PB	H 366.74 MG/KG
ZN	H 540.11 MG/KG

IR33B096	1.75	6.5	10.5
AS	H 5.3 MG/KG		
CD	H 5.3 MG/KG	H 4 MG/KG	H 3.3 MG/KG
CR	H 145 MG/KG	H 143 MG/KG	
CU	H 3630 MG/KG	H 162 MG/KG	H 739 MG/KG
PB	H 559 MG/KG	H 191 MG/KG	H 206 MG/KG
SB	H 10 MG/KG	H 62.4 MG/KG	H 14.8 MG/KG
TPH-MTR OIL	P 1300 MG/KG		
ZN	H 2330 MG/KG	H 1580 MG/KG	H 1060 MG/KG

PA33B040	2.25	10.25
AS	H 3.36 MG/KG	H 3.24 MG/KG
CR		H 536.95 MG/KG

IR33B067	6.25	11.25	16.25
AS			H 4.8 MG/KG
PB			H 10 MG/KG
V	H 118 MG/KG	H 148 MG/KG	

IR34B033	6.25	11.25	21.25
AS			H 3.65 MG/KG
MN		H 1450.15 MG/KG	
V	H 145.28 MG/KG		

PA33SS57	5.25
CO	H 133.67 MG/KG
CR	RH 1351.6 MG/KG
MN	H 1530.62 MG/KG
PB	H 20.79 MG/KG
TOG	P 2200 MG/KG

PA33B035	2.25	6.75
V	H 137.73 MG/KG	H 176.36 MG/KG

PA33B051	12.25
PB	H 9.02 MG/KG

IR33B117	0.75	4.25	9.25
TL	H 4.6 MG/KG	H 3.4 MG/KG	H 4.4 MG/KG
V			H 136 MG/KG

IR33B100	6.25	11.25	15.75	21.25
AS			H 6.32 MG/KG	H 5.47 MG/KG
CR		H 706.36 MG/KG		
CU	H 645.07 MG/KG			
PB	H 16.11 MG/KG			
ZN	H 125.2 MG/KG			

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

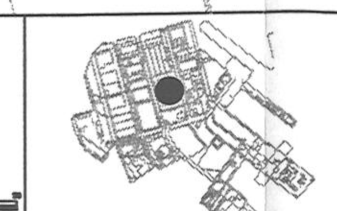
1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs) — ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).

- R EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- R EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- H EXCEEDS HPAL
- P EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET



PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

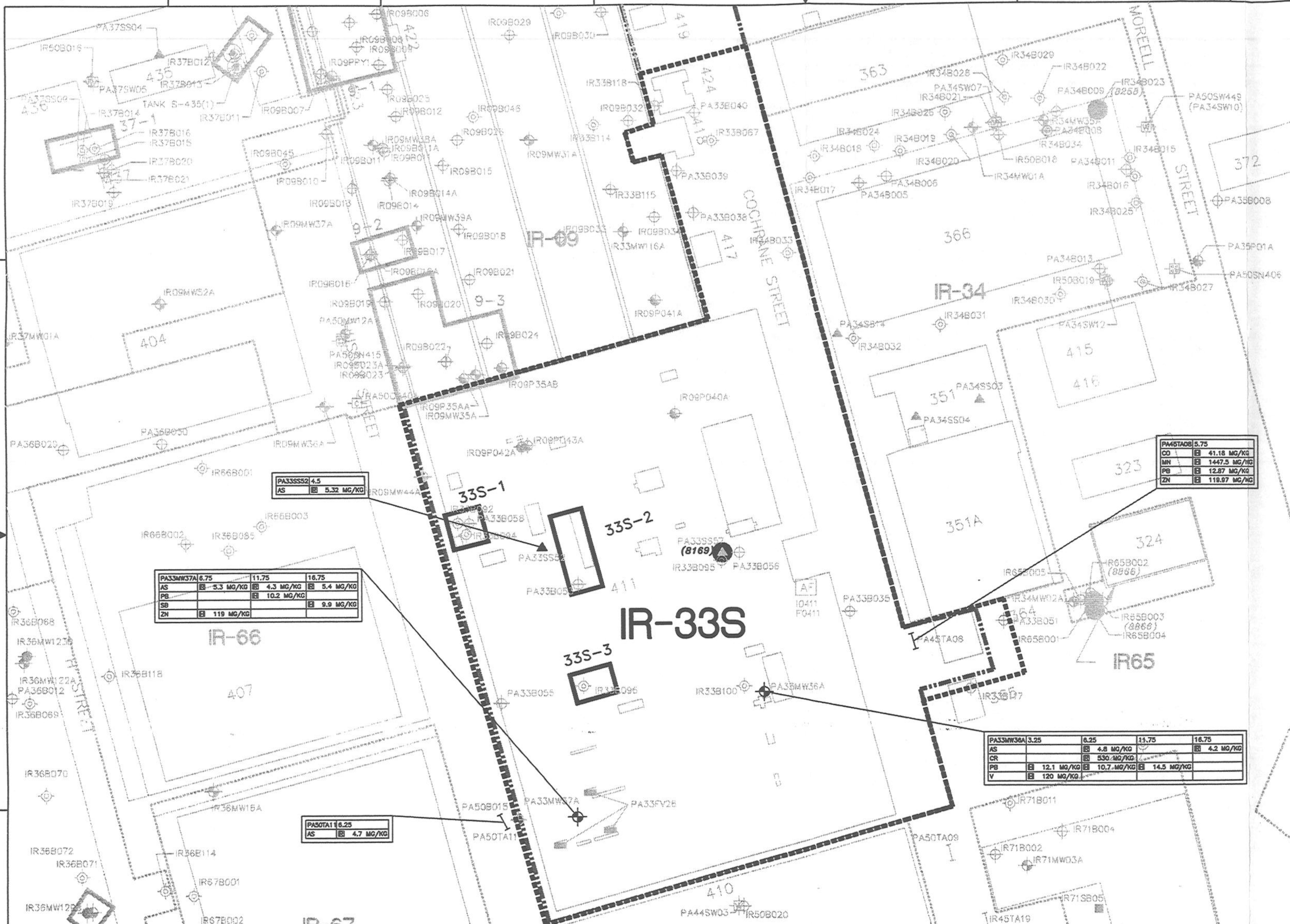
SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.09-2 SHT 2 of 3
PARCEL D
IR-33S SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 332092 SH 2 REV —

FILE NAME: 3320922_.DWG



PA33SS52	4.5
AS	5.32 MG/KG

PA33MW37A	6.75	11.75	16.75
AS	5.3 MG/KG	4.3 MG/KG	5.4 MG/KG
PB		10.2 MG/KG	
SB			9.9 MG/KG
ZN	119 MG/KG		

PA45TA08	5.75
CO	41.18 MG/KG
MN	1447.5 MG/KG
PB	12.87 MG/KG
ZN	119.97 MG/KG

PA33MW36A	3.25	6.25	11.75	16.75
AS		4.8 MG/KG		4.2 MG/KG
CR		530 MG/KG		
PB	12.1 MG/KG	10.7 MG/KG	14.5 MG/KG	
V	120 MG/KG			

PA50TA11	6.25
AS	4.7 MG/KG

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs) — ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (μg/kg).

- EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- EXCEEDS HPAL
- EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.09-2 SHT 3 of 3
PARCEL D
IR-33S SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 332092 SH 3 REV –

FILE NAME: 3320923_.DWG

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

SYM NO.	SYM	DESCRIPTION
1		A-AQUIFER MONITORING WELL
2		B-AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A-AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17		FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND-AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A-AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

REV -
SH 1
DWG NO. 332093

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.09-3 SHT 1 of 2
PARCEL D
IR-33S GROUNDWATER RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3320931_.DWG

IR09MW44A	10/8/91	12/18/91	11/10/93	2/22/94	5/11/94	9/7/94
AS	[T] 2.7 UG/L	[T] 4.4 UG/L				
CHLOROFORM	[T] 7.3 UG/L	[T] 1 UG/L				
HG	[J] .22 UG/L					
NI		[J] 38.7 UG/L	[B][T] 100.86 U	[J] 62.38 UG/L	[J] 47.43 UG/L	[J] 49.09 UG/L

IR09P043A	10/8/91	12/18/91	11/10/93	2/24/94	5/12/94	9/8/94
AS	[T] 4.3 UG/L	[T] 6.8 UG/L				
BA	[E] 583 UG/L	[E] 559 UG/L				
CO		[E] 22.5 UG/L				
MN	[+] 3970 UG/L	[+] 5750 UG/L				
NI	[B][T] 185 UG/L	[B][T] 134 UG/L	[B][T] 140.59 U	[B][T] 119.47 U	[B][T] 99.58 UG/L	[B][T] 111.85 U
SB		[J][T] 33.3 UG/L				

IR09P040A	10/8/91	12/17/91	11/12/93	9/8/94
AG	[J] 1.7 UG/L			
AS		[T] 2.8 UG/L		
B(B)FLRANTHN	[T] .2 UG/L			
BENZO(A)PYRE	[T] .31 UG/L	[T] .23 UG/L		
CHLOROFORM	[T] 2.2 UG/L			
INDENO PYREN	[T] .3 UG/L			
MN	[+] 3150 UG/L	[+] 3640 UG/L		
NI			[J] 15.32 UG/L	[J] 12.64 UG/L

PA33MW36A	3/25/93	2/7/96	3/11/96
AS	[T] 3.96 UG/L	[T] 1.5 UG/L	[T] 1.5 UG/L
BA		[E] 583 UG/L	[E] 710 UG/L
HG	[J] .12 UG/L		
MN	[+] 3087.83 UG/L	[+] 4300 UG/L	[+] 4450 UG/L
NI	[J] 17.37 UG/L	[J] 18.6 UG/L	[J] 16.4 UG/L
PB	[J] 8.56 UG/L		
SB	[J] 14.19 UG/L		

PA33MW37A	3/25/93	7/26/95	2/12/96
AS	[T] 6.5 UG/L	[T] 9.24 UG/L	[T] 8.1 UG/L
BA		[E] 529.66 UG/L	[E] 952 UG/L
CO		[E] 56.98 UG/L	
HG	[J] .15 UG/L		
MN		[+] 2787.33 UG/L	[+] 4150 UG/L
NI	[J] 58.37 UG/L	[B][T] 317.15 U	[J] 38.9 UG/L
PB	[J] 15.05 UG/L		
SB	[J][+] 1115.72 UG/L		
TL		[J] 10.15 UG/L	
TPH-MTR OIL			[E] 140 UG/L

SYMBOL	DESCRIPTION
PA24MW03A	A–AQUIFER MONITORING WELL
IR26MW42B	B–AQUIFER MONITORING WELL
IR06MW46F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
UST(20)–(30)	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
(1000)	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:
1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE THAT EITHER NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — IR10MW20A | 6/15/92 | TCE [T] 38 ug/kg | As [T] 0.0028 ug/kg — DATE OF GROUNDWATER SAMPLE, G=GRAB, OR HYDROPUNCH SAMPLE DEPTH.

ANALYTE

CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
- [T] EXCEEDS CARCINOGENIC TAP WATER PRG
- [+] EXCEEDS NON–CARCINOGENIC TAP WATER PRG
- [J] EXCEEDS NAWQC
- [B] EXCEEDS MCL
- [E] EXCEEDS PETROLEUM SCREENING CRITERIA
- [H] EXCEEDS HGAL

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.09–3 SHT 2 of 2

PARCEL D
IR–33S GROUNDWATER RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 3320932 REV – SH 2

1 FILE NAME: 3320932_.DWG

IR-34

DRAFT FINAL
PARCEL D
RISK MANAGEMENT REVIEW PROCESS

DATED 20 JUNE 2000

LIST OF CONTENTS: IR-34

SITE IR-34: DE MINIMIS AREA 8258 (GRID CELL AW20)

Operational History and Site Characterization

De minimis area 8258 is located approximately 25 feet from the northeastern corner of Building 366. Building 366 was a former boat and plastics shop. A battery storage area was located north of the building. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial standards. The City of San Francisco (the City) is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted at the suspected source area. Based a review of the data, the Navy believes the area is adequately characterized for remedial investigation and feasibility study (RI/FS) purposes.

Data Evaluation and Risk Assessment

De minimis area 8258 is an 8- by 8-foot area located in grid cell AW20, and is associated with boring IR34B023. Under an industrial reuse scenario, grid cell AW20 has an estimated excess lifetime cancer risk (ELCR) of 4×10^{-6} and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Because these ELCRs exceeded 1×10^{-6}, further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells was not used to evaluate grid cell AW20. Chemicals driving risk (benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, and dibenzo[a,h]anthracene) were detected in boring IR34B023. These chemicals are bounded spatially (with decreasing trends) by borings IR34B015, IR34B022, IR34B034, IR34MW35A, PA34B008, and PA34B009, as shown on Figure 1.

De Minimis Area 8258 Industrial Scenario Risk Drivers

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.27 at 1.25 feet	2×10^{-6}	<1
Benzo(a)anthracene	0.69 at 1.25 feet	6×10^{-7}	<1
Benzo(b)fluoranthene	0.44 at 1.25 feet	4×10^{-7}	<1
Benzo(k)fluoranthene	0.33 at 1.25 feet	3×10^{-7}	<1
Dibenzo(a,h)anthracene	0.084 at 1.25 feet	4×10^{-7}	<1

Risk Management Factors

The maximum concentrations of all chemicals driving risk are below current screening criteria. The maximum concentration of benzo(a)pyrene (0.27 mg/kg) is slightly higher than the 1995 industrial

preliminary remediation goal (PRG) (0.26 mg/kg), but is lower than the 1998 industrial PRG (0.36 mg/kg). The maximum concentration of benzo(a)anthracene (0.69 mg/kg) is below the 1995 and 1998 industrial PRGs (2.6 and 3.6 mg/kg, respectively). The maximum concentration of benzo(b)fluoranthene (0.44 mg/kg) is below the 1995 and 1998 industrial PRGs (2.6 and 3.6 mg/kg, respectively). The maximum concentration of benzo(k)fluoranthene (0.33 mg/kg) is below the 1995 and 1998 industrial PRGs (26 and 36 mg/kg, respectively). The maximum concentration of dibenzo(a,h)anthracene (0.084 mg/kg) is below the 1995 and 1998 industrial PRGs (0.26 and 0.36 mg/kg, respectively). In addition, the ELCR of grid cell AW20 is within acceptable risk range because the planned reuse of the site is consistent with the historical industrial use of the site.

Groundwater Issues

At de minimis area 8258, groundwater is encountered at about 8 to 9 feet bgs. The risk management review (RMR) did not include evaluation of soil as a source to groundwater. The groundwater below this area is currently being evaluated as a potential drinking water source. A complete groundwater evaluation, including an evaluation of soil as a source to groundwater contamination, will be documented in a proposed Phase I groundwater data gap evaluation.

Other Information

Total petroleum hydrocarbons (TPH) as motor oil (TPH-mo) were detected at a maximum concentration of 6,500 mg/kg. No removal actions or exploratory excavations have been conducted in this area.

Conclusions:

- ✓ The Navy concluded that no Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response is required for de minimis area 8258.

RISK MANAGEMENT DECISION PROCESS FOR SOIL
PARCEL D, HUNTERS POINT SHIPYARD

IR Site Number	Risk Grid Cell Number and ELCR Grid Value	Remediation or De Minimis Area Number
IR-34	AW20, 4×10^{-6}	DM 8258

Operational History	De minimis area 8258 is located approximately 25 feet from the northeastern corner of Building 366. Building 366 was a former boat and plastics shop. A battery storage area was located north of the building.
• Is the site adequately characterized?	Yes. De minimis area 8258 is associated with boring IR34B023. Borings IR34B015, IR34B022, IR34B034, IR34MW35A, PA34B008, and PA34B009 bound this de minimis area.
• Are the detected chemicals consistent with the operational history?	Benzo(a)pyrene (2×10^{-6}), benzo(a)anthracene (6×10^{-7}), benzo(b)fluoranthene (4×10^{-7}), benzo(k)fluoranthene (3×10^{-7}), and dibenzo(a,h)anthracene (4×10^{-7}) were detected at a depth of 1.25 feet bgs in boring IR34B023 and were considered to be an artifact of the overlying asphalt.
• Does the distribution of the detected chemicals make sense?	Yes.

Are There Hot Spots Located in This Area?	No.
• How do these hot spots compare with the ambient values (metals and polynuclear aromatic hydrocarbons [PAH])?	PAHs detected at a depth of 1.25 feet bgs were considered to be an artifact of the overlying asphalt.

Is Groundwater Contamination Present?	A groundwater sample collected from boring IR34B023 indicated the presence of TPH as motor oil (TPH-mo) (990 micrograms per liter).
• Is the groundwater contamination similar to the detected chemicals in the surrounding soils?	Yes. TPH-mo was detected in a soil sample collected from boring IR34B023.
• Has a potential source of the groundwater contamination been identified?	No.

Has TPH been Detected over a Screening Criterion?	
• TPH as gasoline (TPH-g) > 100 parts per million (ppm)?	No.
• TPH as diesel (TPH-d) > 1,000 ppm?	No.
• TPH-mo > 1,000 ppm?	Yes. 6,500 mg/kg.
• Total recoverable petroleum hydrocarbons (TRPH) > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

Special Factors	
• Ecological risk present (paved/unpaved)?	No. The site is paved with asphalt.
• Polychlorinated biphenyls greater than 10 ppm?	No. PCBs were not detected in this boring.
• Previous removal actions?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations?	No.
– Does this correspond with the distribution of the chemicals?	N/A

Is there a Problem with	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.

Action Required	No further action is recommended for this site.
• Remedial action required?	No.
• Additional site characterization?	No.
• Use of institutional controls to mitigate risk?	No.
• No further action recommended?	Yes.

NOTES:

The Navy concluded that no CERCLA response action is required for de minimis area 8258.

SUMMARY OF HUMAN HEALTH RISK AT PARCEL D UNDER 10^{-6} FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO (Continued)
PARCEL D, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

IR-Site	Grid Cell	Remedial or De Minimis Area	Chemical Risk Driver	95% UCL/ Risk	ELCR and HI Grid Value	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet bgs)	Detected Concentration (mg/kg)	1995 PRG (mg/kg)	1998 PRG (mg/kg)	HPAL (mg/kg)				
IR-33N	AT19	DM 7353	Chromium	1×10^{-6}	1×10^{-6}	IR33B105	7.25	1,720	1,600	450	1,664 (sample-specific)	Chromium source may be related to serpentine fill. TPH contamination from AST.	Asphalt	TRPH: 23,000	De minimis areas 7353 and 7453 are near the northeastern corner of Building 302. Building 302 was used as a transportation shop for the repair of automotive and locomotive equipment.
			Chromium VI (calculated based on chromium values)		HI < 1			13.4	230	64	NA			TPH-mo: 9,000	These de minimis areas were excavated as part of the exploratory excavation, EE-12.
		DM 7453	Lead			PA33SS11	0.00	1,800	1,000	1,000	8.99				
IR-33S	AV25	RA 33S-2	Aroclor-1254	4×10^{-6}	1×10^{-5}	PA33B053	9.75	0.68	0.34	1.3	NA	Suspected source of contamination is leaks of liquids from a nearby sump. Arsenic attributed to variations in background concentrations.	Concrete	TPH-d: 1,500	IR-33S covers about 6 acres and consists of Buildings 364, 365, 411, 417, 418, and 424.
		RA 33S-1	Arsenic	4×10^{-6}	HI < 1	IR33B094	6.75	11	2.0	3.0	11.1				Remedial areas 33S-1 and 33S-2 are inside of Building 411, adjacent to floor sumps used to support fixed machinery. The Navy used Building 411 for machining and welding operations.
		RA 33S-1	Benzo(a)pyrene	2×10^{-6}		IR33B092	4.50	0.19	0.26	0.36	NA				
		RA 33S-1	Benzo(a)pyrene			IR33B092	1.25	0.13	0.26	0.36	NA				
	AW25	RA 33S-3	Benzo(a)anthracene	7×10^{-7}	2×10^{-6}	IR33B096	6.50	0.81	2.6	3.6	NA	Unknown	Concrete	TPH-mo: 1,300	Remedial area 33S-3 is inside of Building 411, adjacent to floor sumps used to support fixed machinery. The Navy used Building 411 for machining and welding operations.
			Benzo(b)fluoranthene	8×10^{-7}	HI < 1	IR33B096	6.50	1.0	2.6	3.6	NA				
	AW24	DM 8169	Chromium	1×10^{-6}	1×10^{-6}	PA33SS57	5.25	1,352	1,600	450	1,161 (sample-specific)	Chromium source may be related to serpentine fill.	Concrete	TOG: 2,200	De minimis area 8169 is inside of Building 411, in an area were surface staining was observed. The Navy used Building 411 for machining and welding operations.
			Chromium VI (calculated based on chromium values)		HI < 1			10.5	230	64	NA				
IR-34 (IR-33N, IR-35)	AW20	DM 8258	Benzo(a)pyrene	2×10^{-6}	4×10^{-6}	IR34B023	1.25	0.27	0.26	0.36	NA	May be related to surface spillage of waste oil.	Asphalt	None exceeding the soil cleanup criteria.	IR-34 covers about 5 acres and consists of Buildings 351, 351A, and 366.
			Benzo(a)anthracene	6×10^{-7}	HI < 1	IR34B023	1.25	0.69	2.6	3.6	NA				De minimis area 8258 is about 25 feet from the northwestern corner of Building 366. Building 366 was a former boat and plastics shop which discharged paint and cleaning products containing epoxies, solvents, waste oil, and hydraulic fluid down drains. There was a battery storage area north of the building.
			Benzo(b)fluoranthene	4×10^{-7}		IR34B023	1.25	0.44	2.6	3.6	NA				
			Dibenzo(a,h)anthracene	4×10^{-7}		IR34B023	1.25	0.084	0.26	0.36	NA				
			Benzo(k)fluoranthene	3×10^{-7}		IR34B023	1.25	0.33	26	36	NA				
IR-35 (IR-22)	BA22	RA 35-1	Benzo(a)pyrene	8×10^{-6}	2×10^{-5}	IR35SS14	0.25	1.0	0.26	0.36	NA	Leaky transformer at Building 306. Potential surface spill of waste oil.	Asphalt in poor condition. Concrete floor located inside of Building 306.	None exceeding soil cleanup criteria.	IR-35 covers about 3.4 acres and consists of Buildings 274, 306, and 372.
		RA 35-1	Benzo(a)pyrene	—	HI < 1	IR35SS15	0.25	0.49	0.26	0.36	NA				Remedial area 35-1 is north of Building 274. Building 274 was used as a former decontamination training facility. No records of radioactive materials or use of radioactive materials were found for Building 274. However, suspected sandblast abrasive is located outside of Building 274.
		DM 9363	Aroclor-1260	5×10^{-5}		PA35SS06	0.75	0.95	0.34	1.3	NA				
		RA 35-1	Aroclor-1260	—		IR35SS14	0.25	0.51	0.34	1.3	NA				
		RA 35-1	Aroclor-1260	—		IR35SS15	0.25	0.31	0.34	1.3	NA				
		RA 35-1	Benzo(b)fluoranthene	2×10^{-6}		IR35SS14	0.25	2.2	2.6	3.6	NA				
		RA 35-1	Benzo(b)fluoranthene	—		IR35SS15	0.25	1.2	2.6	3.6	NA				De minimis area 9363 is located inside Building 306 near a leaking transformer. The area surrounding the transformer appears to be a gravel bed surrounded by concrete. Building 306 is an active electrical substation.
		RA 35-1	Benzo(a)anthracene	6×10^{-7}		IR35SS14	0.25	0.71	2.6	3.6	NA				
		RA 35-1	Benzo(k)fluoranthene	6×10^{-7}		IR22SS25	0.25	0.70	26	36	NA				
		RA 35-1	Indeno(1,2,3-cd)pyrene	5×10^{-7}		IR35SS14	0.25	0.57	2.6	3.6	NA				
IR-37	AR25	RA 37-1	Aroclor-1260	2×10^{-6}	4×10^{-6}	PA37SS09	0.75	0.26	0.34	1.3	NA	May be related to surface spillage of waste oil.	Asphalt	TOG: 29,000	IR-37 covers about 3 acres and consists of Buildings 410, 423, 435, 436, and 437, and former USTs S-435(1) and S-435(2). The 750-gallon steel solvent USTs were removed in August 1991. Soils excavated from around the USTs were disposed of at a Class I landfill facility.
			Aroclor-1260	—	HI < 1	IR37B017	0.75	0.46	0.34	1.3	NA			TRPH: 6,350	
			Benzo(a)pyrene	1×10^{-6}		IR37B015	1.25	0.12	0.26	0.36	NA			TPH-mo: 2,700	Remedial area 37-1 is between Buildings 436 and 437. Building 436 was used by the Navy as a painting and paint storage facility. Building 437 is a wood and tin shed with an exposed soil floor. This building was used as a pipe storage facility.
			Benzo(b)fluoranthene	2×10^{-7}		IR37B015	1.25	0.25	2.6	3.6	NA				
			Benzo(a)anthracene	1×10^{-7}		IR37B015	1.25	0.15	2.6	3.6	NA				This remedial area was excavated as part of the exploratory excavation EE-14.

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S (IR-44)	AY26 (086075, 086076, 087076)	6E-06 (4E-07)	Arsenic (6E-06)	15	IR50B020	6.25	15.2 •,α
			Arsenic	--	IR50B020	2.25	3.0 •
			Arsenic	--	IR50B021	2.75	3.0 •
			Arsenic	--	IR50B021	6.25	2.0
			Aroclor-1260 (8E-08)	0.015	IR50B020	2.25	0.02
			4,4'-DDT (5E-10)	0.0039	IR50B020	2.25	0.004
			Tetrachloroethene (4E-10)	0.0030	IR50B020	2.25	0.003
IR-34 (IR-33N)	AV21 (079061)	5E-10 (7E-11)	4,4'-DDT (5E-11)	0.00043	PA34B006	6.75	0.0001
			4,4'-DDT	--	PA34B006	2.25	0.0004
			Heptachlor (5E-10)	0.00023	PA34B006	2.25	0.0002
IR-34 (IR-33S)	AV22 (077064, 078062, 079062, 079064)	4E-07 (6E-08)	Beryllium (4E-07)	0.40	PA33B038	6.75	0.73 α
			Beryllium	--	IR34B017	1.25	0.50
			Beryllium	--	IR34B033	6.25	0.43
			Beryllium	--	IR34B018	7.25	0.29
			Beryllium	--	PA33B038	2.25	0.26
			Beryllium	--	IR34B018	1.25	0.21
IR-34 (IR-33N, IR-35)	AW20 (080058, 081058, 082058)	4E-06 (3E-07)	Benzo(a)pyrene (2E-06)	0.27	IR34B023	1.25	0.3 •
			Benzo(a)anthracene (6E-07)	0.69	IR34B023	1.25	0.7
			Dibenz(a,h)anthracene (4E-07)	0.084	IR34B023	1.25	0.08
			Benzo(b)fluoranthene (4E-07)	0.44	IR34B023	1.25	0.4
			Benzo(k)fluoranthene (3E-07)	0.33	IR34B023	1.25	0.3
			Indeno(1,2,3-cd)pyrene (1E-07)	0.17	IR34B023	1.25	0.2
			Chrysene (5E-08)	0.60	IR34B023	1.25	0.6

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-34 (IR-33N, IR-35)	AW20 (080058, 081058, 082058) (Continued)	4E-06 (3E-07)	Chrysene	--	IR34B022	1.75	0.07
			Carbazole (6E-10)	0.060	IR34B023	1.25	0.06
			Bis(2-ethylhexyl)phthalate (3E-09)	0.40	IR34B029	6.25	0.4
			Bis(2-ethylhexyl)phthalate	--	IR34B029	1.25	0.08
IR-34	AW21 (080059, 080060, 081059, 082059)	4E-09 (2E-10)	4,4'-DDE (9E-11)	0.00077	PA34B008	6.75	0.0008
			4,4'-DDT (5E-10)	0.0045	PA34B008	6.75	0.005
			Bis(2-ethylhexyl)phthalate (4E-09)	0.52	IR34B026	6.25	0.5
IR-34 (IR-33S)	AW22 (081064, 082063)	NC	NE	NE	NE	NE	NE
IR-34 (IR-33S)	AW23 (081065)	5E-07 (6E-08)	Aroclor-1260 (5E-07)	0.10	PA34SS14	1.25	0.1
IR-34 (IR-35)	AX20 (083058, 085058)	2E-08 (2E-09)	Aroclor-1254 (2E-08)	0.0037	PA35B008	1.75	0.004
			4,4'-DDD (5E-11)	0.00064	PA35B008	1.75	0.0006
			Gamma-chlordane (5E-11)	0.00010	PA35B008	1.75	0.0001
			4,4'-DDE (1E-11)	0.00012	PA35B008	1.75	0.0001
			Alpha-chlordane (1E-11)	0.000030	PA35B008	1.75	0.00003
			4,4'-DDT (1E-10)	0.0010	PA35B008	1.75	0.001
			Dieldrin (1E-10)	0.000020	PA35B008	1.75	0.00002

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-34 (IR-35)	AX21 (083059, 084059, 084060, 084061, 085059, 085060)	8E-08 (9E-09)	Aroclor-1260 (8E-08)	0.014	PA34B011	6.75	0.01
			4,4'-DDE (2E-12)	0.000020	PA34B011	1.75	0.00002
			Gamma-chlordane (2E-11)	0.000050	PA34B011	6.75	0.00005
			Dieldrin (2E-10)	0.000040	PA34B011	6.75	0.00004
			Trichloroethene (2E-09)	0.021	PA34B011	6.75	0.02
			Trichloroethene	--	IR50B019	1.75	0.01
			4,4'-DDT (2E-11)	0.00017	PA34B011	1.75	0.0002
			1,1-Dichloroethane (2E-10)	0.0020	PA34B011	6.75	0.002
			4,4'-DDD (2E-11)	0.00018	PA34B011	1.75	0.0002
			Alpha-chlordane (1E-11)	0.000030	PA34B011	6.75	0.00003
			Beta-BHC (1E-10)	0.00019	PA34B011	1.75	0.0002
IR-34	AX22 (084064)	1E-09 (1E-10)	Bis(2-ethylhexyl)phthalate (1E-09)	0.16	PA34SS03	2.75	0.2
IR-34 (IR-33S)	AX23 (083065)	NC	NE	NE	NE	NE	NE
IR-34 (IR-33S)	AX24 (084069, 085069)	4E-09 (1E-10)	Trichloroethene (4E-09)	0.036	PA33B035	2.25	0.04
IR-34 (IR-33S, IR-65)	AY23 (087067, 088066)	2E-06 (1E-07)	Aroclor-1260 (1E-06)	0.25	IR65B001	0.75	0.3
			Aroclor-1260	--	IR65B004	1.00	0.07
			Arsenic (5E-07)	1.2	IR65B004	1.00	47.2
			Arsenic	--	IR65B002	3.00	2.0
			Arsenic	--	IR65B003	5.00	1.8

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site[a]	Industrial Exposure Area[b,c]	Total ELCR[d]	COPC Contributing Significantly to the Total ELCR[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-34	AY23	2E-06	Arsenic	--	IR65B005	5.00	1.2
(IR-33S,	(087067,	(1E-07)	Arsenic	--	PA33B051	7.25	1.0
IR-65)	088066)		Arsenic	--	IR65B002	5.00	0.75
	(Continued)		Arsenic	--	IR65B005	3.00	0.68
			Arsenic	--	IR65B004	5.00	0.50
			Arsenic	--	IR65B004	3.00	0.48
			Arsenic	--	IR65B003	1.00	0.46
			Arsenic	--	IR65B005	1.00	0.45
			Chrysene (2E-08)	0.28	IR65B001	0 75	0.3
			4,4'-DDD (4E-09)	0.049	IR65B001	0.75	0.05
			4,4'-DDE (2E-09)	0.019	IR65B001	0.75	0.02
IR-34	AY24	1E-07	Aroclor-1260 (1E-07)	0.022	IR33B117	0.75	0.02
(IR-33S,	(087069)	(1E-08)					
IR-71)							
IR-35	AW20	4E-06	Benzo(a)pyrene (2E-06)	0.27	IR34B023	1.25	0.3
(IR-33N,	(080058,	(3E-07)	Benzo(a)anthracene (6E-07)	0.69	IR34B023	1.25	0.7
IR-34)	081058,		Dibenz(a,h)anthracene (4E-07)	0.084	IR34B023	1.25	0.08
	082058)		Benzo(b)fluoranthene (4E-07)	0.44	IR34B023	1.25	0.4
			Benzo(k)fluoranthene (3E-07)	0.33	IR34B023	1.25	0.3
			Indeno(1,2,3-cd)pyrene (1E-07)	0.17	IR34B023	1.25	0.2
			Chrysene (5E-08)	0.60	IR34B023	1.25	0.6
			Chrysene	--	IR34B022	1.75	0.07
			Carbazole (6E-10)	0.060	IR34B023	1.25	0.06

(Continued)

SOIL SUMMARY TABLE
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS
PARCEL D HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

HI	Hazard Index
EPC	Exposure point concentration
mg/kg	Milligram per kilogram
NC	Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.
NE	Not evaluated
a	The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.
d	The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.
e	Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME
f	The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.
g	If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.
h	Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).
i	The central nervous sysstem is the primary system affected by the indicated chemical, generally at the lowest dose levels.
j	Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.
k	Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.
l	The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.
m	The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
n	The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
o	The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
p	The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
q	The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
*	The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).
α	The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

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TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-33S	AW25 (082073)	2×10^{-6} (2×10^{-7})	<1	Benzo(a)anthracene (7×10^{-7}) Benzo(b)fluoranthene (8×10^{-7})	0.81 1.00	IR33B096 IR33B096	6.50 6.50	0.81 1.0
IR-33S (IR-67)	AW26 (081076, 082075)	2×10^{-10} (2×10^{-11})	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AX23 (083065)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34)	AX24 (084069, 085069)	4×10^{-9} (1×10^{-10})	<1	NE	NE	NE	NE	NE
IR-33S	AX25 (083071, 084071)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-44, IR-67)	AX27 (085079)	NC	<1	NE	NE	NE	NE	NE
IR-33S (IR-34, IR-65)	AY23 (087062, 088066)	2×10^{-6} (1×10^{-7})	<1	Aroclor-1260 (1×10^{-6}) Arsenic (5×10^{-7})	0.25 1.2	IR65B001 IR65B004	0.75 1.00	0.25 47 α, #
IR-33S (IR-34, IR-71)	AY24 (087069)	1×10^{-7} (1×10^{-8})	<1	NE	NE	NE	NE	NE
IR-33S (IR-44)	AY26 (086075, 086076, 087076)	6×10^{-6} (4×10^{-7})	<1	Arsenic (6×10^{-6})	15	IR50B020	6.25	15 α, #
IR-34 (IR-33N)	AV21 (079061)	5×10^{-10} (7×10^{-11})	<1	NE	NE	NE	NE	NE

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR[d]	Total Segregated HI[e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead[f]	EPC[g] (mg/kg)	Significant Sampling Location Information[h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-34 (IR-33S)	AV22 (077064, 078062, 079062, 079064)	4×10^{-7} (6×10^{-6})	<1	NE	NE	NE	NE	NE
IR-34 (IR-33N, IR-35)	AW20 (080058, 081058, 082058)	4×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (2×10^{-6}) Benzo(a)anthracene (6×10^{-7}) Benzo(b)fluoranthene (4×10^{-7}) Dibenzo(a,h)anthracene (4×10^{-7}) Benzo(k)fluoranthene (3×10^{-7})	0.27 0.69 0.44 0.084 0.33	IR34B023 IR34B023 IR34B023 IR34B023 IR34B023	1.25 1.25 1.25 1.25 1.25	0.27 # 0.69 0.44 0.084 0.33
IR-34	AW21 (080059, 080060, 081059, 082059)	4×10^{-9} (2×10^{-10})	<1	NE	NE	NE	NE	NE
IR-34 (IR-33S)	AW22 (081064, 082063)	NC	<1	NE	NE	NE	NE	NE
IR-34 (IR-33S)	AW23 (081065)	5×10^{-7} (6×10^{-6})	<1	NE	NE	NE	NE	NE
IR-34 (IR-35)	AX20 (083058, 085058)	2×10^{-6} (2×10^{-9})	<1	NE	NE	NE	NE	NE
IR-34 (IR-35)	AX21 (083059, 084059, 084060, 084061, 085059, 085060)	8×10^{-6} (9×10^{-9})	<1	NE	NE	NE	NE	NE
IR-34	AX22 (084064)	1×10^{-9} (1×10^{-10})	<1	NE	NE	NE	NE	NE
IR-34 (IR-33S)	AX23 (083065)	NC	<1	NE	NE	NE	NE	NE

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site [a]	Industrial Exposure Area [b,c]	Total ELCR [d]	Total Segregated HI [e]	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead [f]	EPC [g] (mg/kg)	Significant Sampling Location Information [h]		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-34 (IR-33S)	AX24 (084069, 085069)	4×10^{-5} (1×10^{-10})	<1	NE	NE	NE	NE	NE
IR-34 (IR-33S, IR-65)	AY23 (087067, 088066)	2×10^{-6} (1×10^{-7})	<1	Aroclor-1260 (1×10^{-6}) Arsenic (5×10^{-7})	0.25 1.2	IR65B001 IR65B004	0.75 1.00	0.25 47 α, #
IR-34 (IR-33S, IR-71)	AY24 (087069)	1×10^{-7} (1×10^{-8})	<1	NE	NE	NE	NE	NE
IR-35 (IR-33N, IR-34)	AW20 (080058, 081058, 082058)	4×10^{-6} (3×10^{-7})	<1	Benzo(a)pyrene (2×10^{-6}) Benzo(a)anthracene (6×10^{-7}) Benzo(b)fluoranthene (4×10^{-7}) Dibenzo(a,h)anthracene (4×10^{-7}) Benzo(k)fluoranthene (3×10^{-7})	0.27 0.69 0.44 0.084 0.33	IR34B023 IR34B023 IR34B023 IR34B023 IR34B023	1.25 1.25 1.25 1.25 1.25	0.27 # 0.69 0.44 0.084 0.33
IR-35 (IR-34)	AX20 (083058, 085058)	2×10^{-8} (2×10^{-9})	<1	NE	NE	NE	NE	NE
IR-35 (IR-34)	AX21 (083059, 084059, 084060, 084061, 085059, 085060)	8×10^{-8} (9×10^{-9})	<1	NE	NE	NE	NE	NE
IR-35 (IR-65)	AZ22 (091062)	1×10^{-8} (1×10^{-9})	<1	NE	NE	NE	NE	NE
IR-35 (IR-22)	BA19 (092053, 093055)	4×10^{-8} (3×10^{-9})	<1	NE	NE	NE	NE	NE
IR-35 (IR-22)	BA20 (092058)	NC	<1	NE	NE	NE	NE	NE

TABLE N.5-18 (Continued)

SOIL SUMMARY TABLE
FUTURE INDUSTRIAL CARCINOGENIC RISKS, NONCARCINOGENIC HAZARDS, AND LEAD LEVELS OF CONCERN
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Notes:

bgs	Below ground surface
COPC	Chemical of potential concern
ELCR	Excess lifetime cancer risk
EPC	Exposure point concentration
HI	Hazard index
mg/kg	Milligram per kilogram
NC	Not calculated; no carcinogenic COPCs identified in this exposure area; therefore, total segregated HI not calculated
NE	Not evaluated
#	Detected concentration exceeds U.S. Environmental Protection Agency (EPA) Region IX preliminary remediation goal (PRG) for industrial soil
α	Detected concentration exceeds Hunters Point ambient level (HPAL)

a	The number presented in parentheses is another IR site with which the subject industrial exposure area is associated.
b	The exposure area presented is based on a 0.5-acre exposure area.
c	The number presented in parentheses is the associated exposure area for the residential scenario based on a 2,500-square foot exposure area. The total ELCRs for the residential scenario are presented in Table N.5-9, and the total HIs for the residential scenario are presented in Table N.5-10.
d	The total ELCR presented is for the RME case. The value presented in parentheses is for the average exposure case. The total ELCR evaluates the ingestion of, dermal contact with, and inhalation of volatile organic compounds (VOC) and particulate emissions from the soil exposure pathway.
e	The total HIs for the industrial scenario are presented in Table N.I-1 of Attachment N-I.
f	Only the COPC-specific ELCRs for COPCs contributing about 90 percent of the total ELCRs that exceed 1×10^{-4}, COPCs contributing a risk exceeding 1×10^{-6} under the RME case, or lead concentrations exceeding 1,000 mg/kg are listed.
g	The value presented is the EPC assumed for the COPCs contributing significantly to the total ELCR under the RME case.
h	If the COPC-specific total ELCR exceeding 1×10^{-4} can be attributed to one or several sampling locations, the sampling location, depth, and concentration are listed.
i	Chromium VI was not speciated; therefore, for all IR-sites except IR-36S, a surrogate chromium VI value was calculated assuming 0.78 percent of the total chromium value (see Attachment N-C). For IR-36S, a surrogate chromium VI value was calculated assuming 3.3 percent of the total chromium value.

TABLE N.D-1
SOIL SAMPLES ANALYZED FOR BOTH TOTAL CHROMIUM AND CHROMIUM VI
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Sample Station Location	Sample Number	Sample Date	Sample Depth (feet bgs)	Total Chromium Concentration (mg/kg)	Total Chromium Detection Limit (mg/kg)	Chromium VI Concentration (mg/kg)	Chromium VI Detection Limit (mg/kg)
IR-33S	082075	PA33MW37A	9309A642	03/02/93	6.75	379	0.77	ND	0.05
		PA33MW37A	9309A643	03/02/93	11.75	357	0.79	ND	0.05
		PA33MW37A	9309A644	03/02/93	16.75	347	0.82	ND	0.05
	084071	PA33MW36A	9309A647	03/02/93	3.25	199	0.81	ND	0.05
		PA33MW36A	9309A648	03/02/93	6.25	530	0.80	ND	0.05
		PA33MW36A	9309A649	03/02/93	11.75	132	0.79	ND	0.05
		PA33MW36A	9309A650	03/02/93	16.75	333	0.81	ND	0.05
IR-34	079062	PA34B005	93080085	02/26/93	2.25	17.1	0.62	ND	0.05
		PA34B005	93080086	02/26/93	6.75	38.0	0.63	ND	0.05
IR-35	091062	IR35B017	9606G070	02/05/96	7.00	67.1	0.09	0.08	0.05
		IR35B017	9606G071	02/05/96	11.25	91.8	0.10	ND	0.05
		IR35B017	9606G072	02/05/96	16.25	113	0.10	ND	0.05
		IR35B017	9606G073	02/05/96	21.25	71.0	0.09	0.07	0.05
		IR35B017	9606G074	02/05/96	26.25	117	0.09	ND	0.05
		IR35B017	9606G075	02/05/96	32.25	56.3	0.10	ND	0.05
		IR35B017	9606G076	02/05/96	42.00	159	0.10	ND	0.05
		IR35B019	9606J842	02/06/96	2.50	132	0.09	0.12	0.05
		IR35B019	9606J843	02/06/96	6.50	131	0.09	0.06	0.05
	092058	IR22MW08A	9317A798	04/27/93	1.75	149	0.71	ND	0.05
		IR22MW08A	9317A799	04/27/93	3.75	197	0.73	ND	0.05
		IR22MW08A	9317A800	04/27/93	6.25	117	0.73	ND	0.05
		IR22MW08A	9317A801	04/27/93	11.75	125	0.73	ND	0.05
		IR22MW08A	9317A802	04/27/93	16.75	141	0.78	ND	0.05
		IR22MW08A	9317A803	04/27/93	21.75	153	0.80	ND	0.05
	092059	IR22B010	9320A012	05/18/93	1.75	136	0.74	ND	1.0
		IR22B010	9320A013	05/18/93	3.75	139	0.74	0.34	0.10
		IR22B010	9320A014	05/18/93	6.75	109	0.74	0.28	0.10
		IR22B010	9320A015	05/18/93	11.75	113	11.2	0.73	0.10
		IR22B010	9320A016	05/18/93	16.75	139	11.2	0.37	0.10
		IR22B010	9320A018	05/19/93	21.75	113	0.37	0.38	0.25
		IR22B010	9320A019	05/19/93	31.75	58.3	0.38	ND	6.5
	092061	IR35B018	9604J766	01/25/96	2.50	109	0.09	ND	0.10
		IR35B018	9604J767	01/25/96	5.00	111	0.09	ND	0.05
	093063	IR22MW15A	9317A808	04/29/93	1.75	111	0.71	ND	0.05
		IR22MW15A	9317A809	04/29/93	3.75	133	0.72	ND	0.05
		IR22MW15A	9317A810	04/29/93	6.25	152	0.74	ND	0.05
		IR22MW15A	9317A811	04/29/93	11.75	142	0.81	ND	0.05
		IR22MW15A	9317A812	04/29/93	16.75	159	0.79	ND	0.05
		IR22MW15A	9317A813	04/29/93	26.75	162	0.79	ND	0.05
		IR22MW15A	9317A814	04/29/93	31.75	136	0.77	ND	0.05
	093065	IR22B017	9320A020	05/19/93	1.75	98.3	0.31	ND	0.32
		IR22B017	9320A021	05/19/93	3.75	72.4	0.34	0.57	0.23
		IR22B017	9320A022	05/19/93	6.75	107	0.36	ND	3.8
		IR22B017	9320A023	05/19/93	11.75	95.2	0.35	ND	0.65
		IR22B017	9320A026	05/19/93	21.75	115	0.33	0.26	0.06

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TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a]
HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

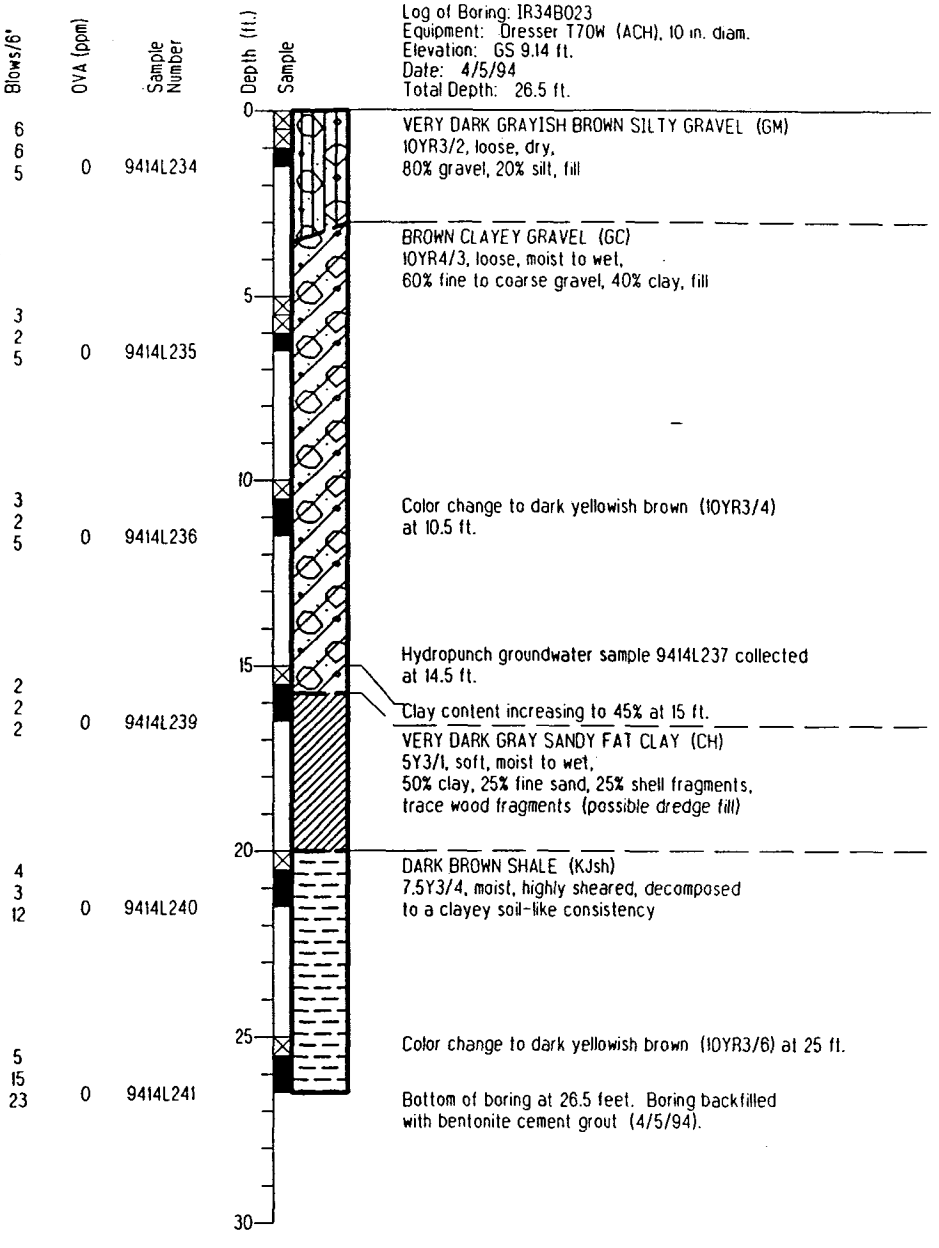
Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[f] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-33S	084069	No	No	ND	PA33B035	9308D074	2.25	162.620	
					PA33B035	9308D075	6.75	139.000	
	084071	Yes	No	ND					
	085069	No	No	ND	PA45TA08	9322P222	5.75	68.820	
	087067	No	No	ND	PA33B051	9342G750	7.25	75.140	
	087069	No	No	ND	IR33B117	9532G038	0.75	64.200	
					IR33B117	9532G040	4.25	59.000	
					IR33B117	9532G041	9.25	106.000	
IR-34	078062	No	No	ND	IR34B017	9413L200	1.25	78.760	
					IR34B017	9413L201	6.25	66.480	
					IR34B018	9432A029	1.25	26.480	
					IR34B018	9432A030	7.25	97.620	
	079061	No	No	ND	IR34B019	9414L218	1.25	195.000	
					IR34B019	9414L219	6.25	181.000	
					IR34B024	9434R584	6.25	30.560	
					PA34B006	9308D088	2.25	71.200	
					PA34B006	9308D089	6.75	114.000	
	079062	Yes	No	ND					
	079064	No	No	ND	IR34B033	9438A072	2.25	5.850	
					IR34B033	9438A073	6.25	115.490	
	080058	No	No	ND	IR34B029	9434R622	1.25	81.930	
					IR34B029	9434R623	6.25	143.070	
	080059	No	No	ND	IR34B028	9427R372	1.75	77.090	
					IR34B028	9427R373	6.25	135.010	
	080060	No	No	ND	IR34B020	9427R384	1.75	83.140	
					IR34B020	9427R385	6.25	81.610	
					IR34B020	9427R386	9.75	106.410	
					IR34B026	9434R616	1.75	67.780	
					IR34B026	9434R617	6.25	106.740	
	081058	No	No	ND	IR34B022	9427R378	1.75	54.460	
					IR34B022	9427R379	7.75	162.160	
					PA34B009	9308D079	2.25	87.400	
					PA34B009	9308D080	6.75	102.000	
	081059	No	No	ND	IR34B021	9414L228	1.25	123.000	
					IR34B021	9414L229	6.25	121.000	
					IR50B018	9422R213	3.75	83.900	

TABLE N.D-3

DETERMINATION OF CHROMIUM VI EXPOSURE POINT CONCENTRATION AND SURROGATE CHROMIUM VI VALUES OF SOIL SAMPLES ANALYZED FOR TOTAL CHROMIUM ONLY[a] HUNTERS POINT SHIPYARD, PARCEL D REMEDIAL INVESTIGATION

Site	Residential Exposure Area	Analyzed for Total Chromium and Chromium VI[b]	Analyzed for Chromium VI Only[c]	Chromium VI EPC[d] (mg/kg)	Analyzed for Total Chromium Only[e]				Surrogate Chromium VI Value[g] (mg/kg)
					Sample Station	Sample Number	Sample Depth (feet bgs)	Detected Value[f] (mg/kg)	
IR-34	081059				IR50B018	9422R214	6.25	160.000	
	081064	No	No	ND	IR34B032	9441A135	1.75	76.390	
					IR34B032	9441A136	6.25	121.490	
	081065	No	No	ND	PA34SS14	9312A696	1.25	80.080	
	082058	No	No	ND	IR34B023	9414L234	1.25	5.700	
					IR34B023	9414L235	6.25	118.000	
	082059	No	No	ND	IR34B034	9551J727	0.75	104.000	
					IR34B034	9551J728	6.00	92.900	
					IR34B034	9551J729	9.75	129.000	
					PA34B008	9308D082	2.25	82.100	
					PA34B008	9308D083	6.75	122.000	
	082063	No	No	ND	IR34B031	9434R608	1.75	94.470	
					IR34B031	9434R609	6.25	70.080	
	083058	No	No	ND	IR34B015	9414L243	1.25	72.400	
					IR34B015	9414L244	6.25	53.100	
	083059	No	No	ND	IR34B016	9414L250	1.25	127.410	
					IR34B016	9414L251	6.25	72.640	
					PA34B011	9309A680	1.75	113.000	
					PA34B011	9309A681	6.75	76.600	
	083065	No	No	ND	PA34SS04	9310J397	1.75	98.680	
	084059	No	No	ND	IR34B025	9414L257	1.25	83.930	
					IR34B025	9414L258	6.25	82.310	
	084060	No	No	ND	PA34B013	9309A638	1.75	107.000	
					PA34B013	9309A639	6.75	120.000	
	084061	No	No	ND	IR34B030	9434R598	1.25	147.060	
					IR34B030	9434R599	6.25	136.030	
					IR50B019	9422R218	1.75	83.300	
					IR50B019	9422R219	6.25	119.000	
	084064	No	No	ND	PA34SS03	9310J398	2.75	116.890	
	085060	No	No	ND	IR34B027	9413L210	1.25	95.350	
					IR34B027	9413L211	6.25	107.630	
	087067	No	No	ND	PA33B051	9342G750	7.25	75.140	
IR-35	085058	No	No	ND	PA35B008	9309A671	1.75	35.400	
					PA35B008	9309A672	6.75	98.500	

Log of Boring: IR34B023
Equipment: Dresser T70W (ACH), 10 in. diam.
Elevation: GS 9.14 ft.
Date: 4/5/94
Total Depth: 26.5 ft.



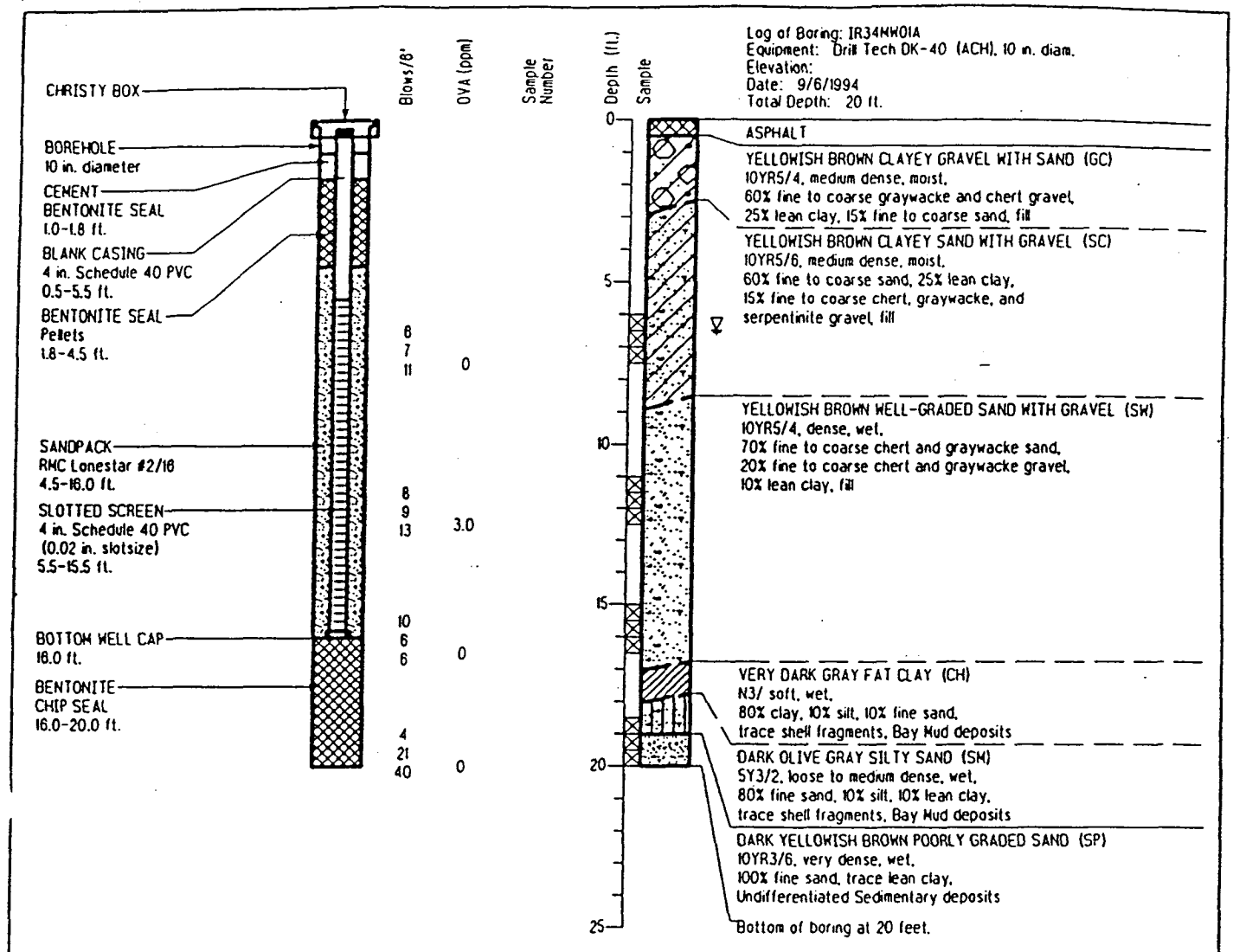
Herding Lawson Associates
Engineering and Environmental Services

Log of Boring IR34B023

Naval Station Treasure Island
Hunters Point Annex
San Francisco, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		05/95	



Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring and Well Completion IR34MW01A

PLATE

Engineering Field Activity West
Hunters Point Annex
San Francisco, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
klr	11400 1418		12/94	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

SYM NO.	SYM	DESCRIPTION
1		A–AQUIFER MONITORING WELL
2		B–AQUIFER MONITORING WELL
3		BEDROCK MONITORING WELL
4		PIEZOMETER
5		DAMES & MOORE BORING
6		SOIL BORING
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH
8		EMCON A–AQUIFER MONITORING WELL
9		EMCON BEDROCK MONITORING WELL
10	A	AIR SAMPLE
11		SUMP SAMPLE
12		SURFACE SOIL SAMPLE
13		SANDBLAST MATERIAL
14	W	STORM DRAIN
15	A	ASBESTOS SAMPLE
16	W	WIPE SAMPLE
17	D	FLOOR DRAIN
18		FLOOR VAULT
19		SANITARY SEWER
20		TRENCH/TEST PIT
21		REMOVAL OR EXPLORATORY EXCAVATION STATION
22		EMCON SOIL BORING
23	ooo	GROUND PENETRATING RADAR PROFILE
24		TIDAL STATION
25	C	CATCH BASIN
26		FLOOD CONTROL GATE
27		STEAMLINE INSPECTION AND/OR BORESCOPE
28		DRY HOLE
29		PROPOSED SOIL BORING
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER
31		INTERTIDAL SEDIMENT SAMPLE
32		RAINFALL STATION
33	S	FLOOR SCRAPINGS
34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
35	CC	CONCRETE CORE
36	SG	SOIL GAS
37		DRUM
38		TANK
39		BULK SAMPLE
40		HAND–AUGER
41	R	REFUSAL WITH NO SAMPLE
42		WEEP HOLE
43		DRILL RIG FLUID
44		SURFACE WATER SAMPLE
45		QUALITY CONTROL
46		CORE SEDIMENT SAMPLE FOR ERA
47		OTHER
48		PUMPING STATION
49		REFERENCE STATION FOR ERA
50		TISSUE STATION FOR ERA
51		UNKNOWN TYPE
52	RT	RADIATION TEST STATION
53		STORM DRAIN MANHOLE
54		CONE PENETROMETER
55		AIR SPARGING WELL
56	SBG	SOIL BORING/SOIL GAS
57		TREATMENT SYSTEM
58		VAPOR EXTRACTION WELL
59		STORM DRAIN REACH
60		PROPOSED SURFACE SOIL SAMPLE
61		PROPOSED A–AQUIFER MONITORING WELL
62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
63		PROPOSED SOIL GAS
64		SOIL BORING/GRAB GROUNDWATER
65		SOIL BORING/HYDROPUNCH

DWG NO. 342102 REV 1 SH 1

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.10–2 SHT 1 of 3

PARCEL D

IR–34 SOIL RESULTS

EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

FILE NAME: 3421021_.DWG

IR-34

IR34B028	6.25	11.25	16.25
MN			2003.35 MG/KG
V	133.68 MG/KG	142.85 MG/KG	140.43 MG/KG

IR34B020	9.75	16.25
AS	3.86 MG/KG	3.82 MG/KG
MN	1655.28 MG/KG	
V	142.66 MG/KG	

IR34B019	6.25	11.25	16.25	21.25
AS			11 MG/KG	3.1 MG/KG
BA	393 MG/KG			
MN	2530 MG/KG			
V	120 MG/KG	145 MG/KG		

IR34B024	6.25	11.25	16.25	21.25
AS	3.48 MG/KG			3.81 MG/KG
MN			1997.31 MG/KG	
V		120.6 MG/KG		

IR34B018	1.25	17.25
AS		5.03 MG/KG
PB	9.84 MG/KG	
TPH-MTR OIL	4100 MG/KG	
TRPH	2200 MG/KG	

IR34B017	1.25	11.25	21.25	26.25
AS	3.32 MG/KG		4.78 MG/KG	3.24 MG/KG
BA	319.88 MG/KG	536.4 MG/KG		
CR			185.78 MG/KG	159.32 MG/KG
MN	1585.75 MG/KG			
NI			353.31 MG/KG	179.3 MG/KG
PB		419.63 MG/KG		
ZN		338.82 MG/KG		

IR34B021	1.25	6.25	11.25	26.25
AS		3.2 MG/KG	3.1 MG/KG	
BA			419 MG/KG	
CR				128 MG/KG
MN		2490 MG/KG	2320 MG/KG	
V	140 MG/KG	140 MG/KG		

IR34B029	11.25
MN	3443.41 MG/KG
TL	1.01 MG/KG
V	118.23 MG/KG

IR34B028	1.75	6.25	11.25	16.25
AS	4.02 MG/KG			8.53 MG/KG
BA	561.43 MG/KG			
MN		2020.98 MG/KG	1907.73 MG/KG	
V		122.55 MG/KG		

IR34B022	1.75	7.75	16.25	19.25
AS	3.71 MG/KG			4.39 MG/KG
MN		1530.57 MG/KG		
TRPH	2900 MG/KG			
V		145.59 MG/KG	124.8 MG/KG	

IR34B023	1.25	6.25	16.25	21.25	26.25
AS			9.1 MG/KG		
CO				33.9 MG/KG	
CU			304 MG/KG		
PB		14.7 MG/KG	337 MG/KG		
TPH-MTR OIL	6500 MG/KG				
V			167 MG/KG	176 MG/KG	
ZN			294 MG/KG	178 MG/KG	

IR34B015	1.25	16.25	21.25	26.25
AS		8 MG/KG		
CO			36.3 MG/KG	
TRPH	2620 MG/KG			
V	125 MG/KG		161 MG/KG	156 MG/KG
ZN				398 MG/KG

IR34B016	1.25	11.25	21.25
CO			39.48 MG/KG
V	134.7 MG/KG	150.02 MG/KG	150.84 MG/KG

IR34B025	11.25
V	119.93 MG/KG

IR34B027	1.25	21.25
AS	4.05 MG/KG	3.13 MG/KG
CU	141.9 MG/KG	

SYMBOL	DESCRIPTION
PA24MW03A	A–AQUIFER MONITORING WELL
IR28MW42B	B–AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:
1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs)
ANALYTE
CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).
EXCEEDS CARCINOGENIC INDUSTRIAL PRG
EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
EXCEEDS HPAL
EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET

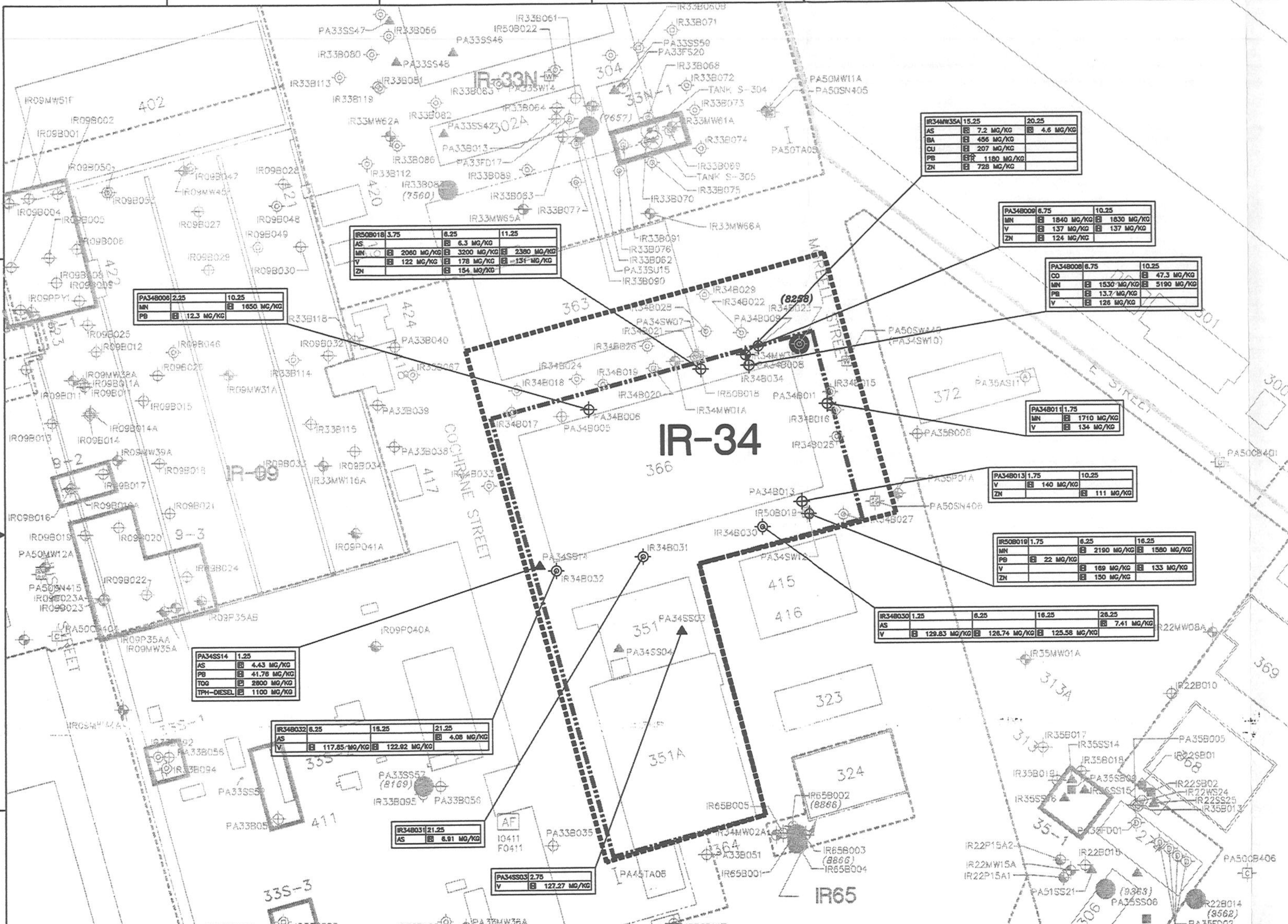
PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.10-2 SHT 2 of 3
PARCEL D
IR-34 SOIL RESULTS
EXCEEDING SCREENING CRITERIA
RISK MANAGEMENT REVIEW PROCESS REPORT

REV –
SH 2
DWG NO. 3421022

1 FILE NAME: 3421022_.DWG



IR34MW35A	15.25	20.25
AS	7.2 MG/KG	4.6 MG/KG
BA	456 MG/KG	
CU	207 MG/KG	
PB	1180 MG/KG	
ZN	728 MG/KG	

PA34B009	6.75	10.25
MN	1840 MG/KG	1830 MG/KG
V	137 MG/KG	137 MG/KG
ZN	124 MG/KG	

PA34B008	6.75	10.25
CO		47.3 MG/KG
MN	1530 MG/KG	5190 MG/KG
PB	13.7 MG/KG	
V	126 MG/KG	

IR50B018	3.75	6.25	11.25
AS		6.3 MG/KG	
MN	2060 MG/KG	3200 MG/KG	2380 MG/KG
V	122 MG/KG	178 MG/KG	131 MG/KG
ZN		154 MG/KG	

PA34B006	2.25	10.25
MN		1650 MG/KG
PB	12.3 MG/KG	

PA34B011	1.75
MN	1710 MG/KG
V	134 MG/KG

PA34B013	1.75	10.25
V	140 MG/KG	
ZN		111 MG/KG

IR50B019	1.75	6.25	16.25
MN		2190 MG/KG	1580 MG/KG
PB	22 MG/KG		
V		169 MG/KG	133 MG/KG
ZN		150 MG/KG	

IR34B030	1.25	6.25	16.25	26.25
AS				7.41 MG/KG
V	129.83 MG/KG	126.74 MG/KG	125.58 MG/KG	

PA34SS14	1.25
AS	4.43 MG/KG
PB	41.76 MG/KG
TOG	2800 MG/KG
TPH-DIESEL	1100 MG/KG

IR34B032	6.25	16.25	21.25
AS			4.08 MG/KG
V	117.85 MG/KG	122.92 MG/KG	

IR34B031	21.25
AS	6.91 MG/KG

PA34SS03	2.75
V	127.27 MG/KG

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 INDUSTRIAL PRG, HPAL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE EITHER THAT NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 PRG, HPAL OR PETROLEUM SCREENING CRITERIA.

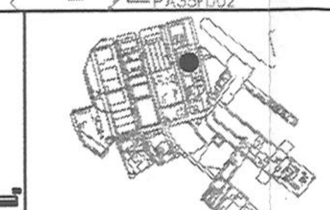
SAMPLE LOCATION — SOIL SAMPLE DEPTH (feet bgs)

ANALYTE

CONCENTRATIONS FOR INORGANICS AND TPH-g, TPH-d, TPH-mo, TOG, AND TRPH ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
CONCENTRATIONS FOR ORGANICS ARE REPORTED IN MICROGRAMS PER KILOGRAM (µg/kg).

- R EXCEEDS CARCINOGENIC INDUSTRIAL PRG
- R EXCEEDS NON-CARCINOGENIC INDUSTRIAL PRG
- H EXCEEDS HPAL
- P EXCEEDS PETROLEUM SCREENING CRITERIA

SCALE IN FEET



PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.10-2 SHT 3 of 3

PARCEL D

IR-34 SOIL RESULTS

EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 342102 SH 3 REV 1

FILE NAME: 3421023_.DWG

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

SYM NO.	SYM	DESCRIPTION	SYM NO.	SYM	DESCRIPTION
1		A-AQUIFER MONITORING WELL	34		UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
2		B-AQUIFER MONITORING WELL	35	CC	CONCRETE CORE
3		BEDROCK MONITORING WELL	36	SG	SOIL GAS
4		PIEZOMETER	37		DRUM
5		DAMES & MOORE BORING	38		TANK
6		SOIL BORING	39		BULK SAMPLE
7		SOIL BORING/GRAB GROUNDWATER/HYDROPUNCH	40		HAND-AUGER
8		EMCON A-AQUIFER MONITORING WELL	41	R	REFUSAL WITH NO SAMPLE
9		EMCON BEDROCK MONITORING WELL	42		WEEP HOLE
10	A	AIR SAMPLE	43		DRILL RIG FLUID
11		SUMP SAMPLE	44		SURFACE WATER SAMPLE
12		SURFACE SOIL SAMPLE	45		QUALITY CONTROL
13		SANDBLAST MATERIAL	46		CORE SEDIMENT SAMPLE FOR ERA
14	W	STORM DRAIN	47		OTHER
15	A	ASBESTOS SAMPLE	48		PUMPING STATION
16	W	WIPE SAMPLE	49		REFERENCE STATION FOR ERA
17	D	FLOOR DRAIN	50		TISSUE STATION FOR ERA
18		FLOOR VAULT	51		UNKNOWN TYPE
19		SANITARY SEWER	52	RT	RADIATION TEST STATION
20		TRENCH/TEST PIT	53		STORM DRAIN MANHOLE
21		REMOVAL OR EXPLORATORY EXCAVATION STATION	54		CONE PENETROMETER
22		EMCON SOIL BORING	55		AIR SPARGING WELL
23	oooo	GROUND PENETRATING RADAR PROFILE	56	SBG	SOIL BORING/SOIL GAS
24		TIDAL STATION	57		TREATMENT SYSTEM
25	C	CATCH BASIN	58		VAPOR EXTRACTION WELL
26		FLOOD CONTROL GATE	59		STORM DRAIN REACH
27		STEAMLINE INSPECTION AND/OR BORESCOPE	60		PROPOSED SURFACE SOIL SAMPLE
28		DRY HOLE	61		PROPOSED A-AQUIFER MONITORING WELL
29		PROPOSED SOIL BORING	62	T	TISSUE OR TISSUE AND SOIL FOR ECO VALIDATION
30		PROPOSED SOIL BORING/HYDROPUNCH/GRAB GROUNDWATER	63		PROPOSED SOIL GAS
31		INTERTIDAL SEDIMENT SAMPLE	64		SOIL BORING/GRAB GROUNDWATER
32		RAINFALL STATION	65		SOIL BORING/HYDROPUNCH
33	S	FLOOR SCRAPINGS			

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.10-3 SHT 1 of 2

PARCEL D

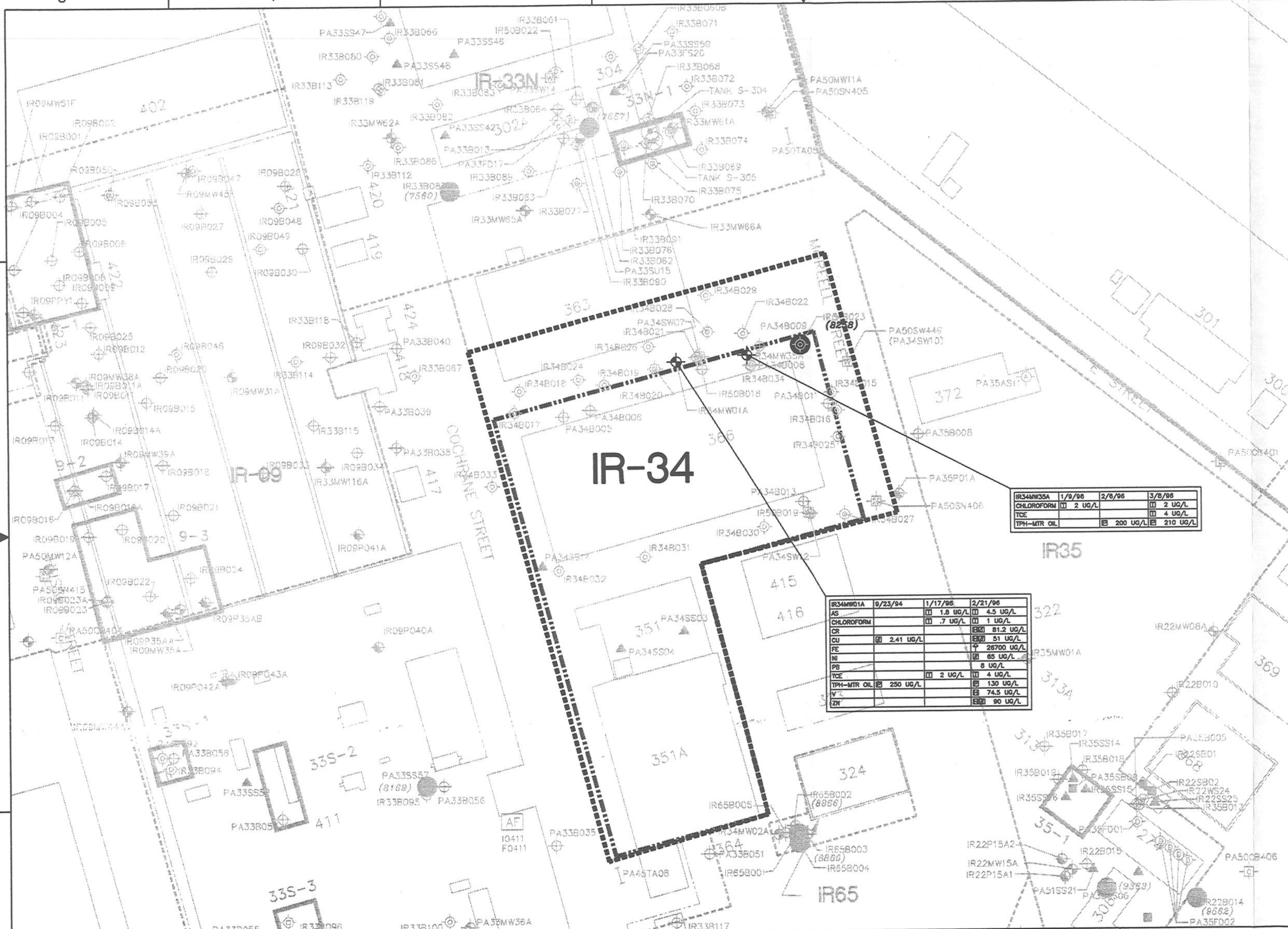
IR-34 GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 3421103 SH 1 REV -

1 FILE NAME: 3421031_.DWG

Continue



IR34MW35A	1/9/96	2/6/96	3/8/96
CHLOROFORM	[T] 2 UG/L		[T] 2 UG/L
TCE			[T] 4 UG/L
TPH-MTR OIL		[P] 200 UG/L	[P] 210 UG/L

IR34MW01A	9/23/94	1/17/96	2/21/96
AS		[T] 1.8 UG/L	[T] 4.5 UG/L
CHLOROFORM		[T] .7 UG/L	[T] 1 UG/L
CR			[H][A] 81.2 UG/L
CU	[A] 2.41 UG/L		[H][A] 51 UG/L
FE			⯑ 26700 UG/L
NI			[A] 65 UG/L
PB			8 UG/L
TCE		[T] 2 UG/L	[T] 4 UG/L
TPH-MTR OIL	[P] 250 UG/L		[P] 130 UG/L
V			[H] 74.5 UG/L
ZN			[H][A] 90 UG/L

SYMBOL	DESCRIPTION
PA24MW03A	A-AQUIFER MONITORING WELL
IR26MW42B	B-AQUIFER MONITORING WELL
IR06MW49F	BEDROCK MONITORING WELL
IR07P20A	PIEZOMETER
PA24B005	SOIL BORING
PA51SS03	SURFACE SOIL SAMPLE
PA46TA03	TRENCH/TEST PIT
IR46B036	SOIL BORING/GRAB GROUNDWATER
IR46B036	SOIL BORING/HYPROPUNCH
	EXPLORATORY EXCAVATION
159	EXISTING BUILDING
155	LOCATION OF FORMER BUILDING
UST(S-138)	UNDERGROUND STORAGE TANK IN HPA TANK PROGRAM
	EXTENDED IR SITE BOUNDRY
	IR SITE BOUNDARY
	PARCEL BOUNDARY
	CRANE OR RAILROAD TRACKS
	FENCE
	ROADWAY
	LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg
(8662)	DE MINIMIS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR>10^{-6} AND OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESIS DESIGNATE THE DE MINIMUS CLEANUP AREA
	ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ECLR>10^{-6} AND OR THE CHILD SEGRAGATED HI IS GREATER THAN OR EQUAL TO 1.0)

NOTES:

1. POSTED DATA ARE CHEMICALS THAT EXCEED 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.
2. STATION LABELS WITHOUT DATA BOXES INDICATE THAT EITHER NO CHEMICALS WERE DETECTED OR THAT DETECTED CHEMICALS WERE BELOW 1998 TAP WATER PRG, NAWQC, MCL OR PETROLEUM SCREENING CRITERIA.

SAMPLE LOCATION → (data box example) ← DATE OF GROUNDWATER SAMPLE, G=GRAB, OR HYDROPUNCH SAMPLE DEPTH.

ANALYTE

CONCENTRATIONS IN MICROGRAMS PER LITER ($\mu g/L$)

- [T] EXCEEDS CARCINOGENIC TAP WATER PRG
- ⯑ EXCEEDS NON-CARCINOGENIC TAP WATER PRG
- [A] EXCEEDS NAWQC
- [M] EXCEEDS MCL
- [P] EXCEEDS PETROLEUM SCREENING CRITERIA
- [H] EXCEEDS HGAL

SCALE IN FEET

PARCEL D KEY MAP

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

SOUTHWEST DIVISION

HUNTERS POINT SHIPYARD — SAN FRANCISCO, CALIFORNIA

Figure 2.10-3 SHT 2 of 2

PARCEL D

IR-34 GROUNDWATER RESULTS EXCEEDING SCREENING CRITERIA

RISK MANAGEMENT REVIEW PROCESS REPORT

DWG NO. 3421032 SH 2 REV —

FILE NAME: 3421032_.DWG